Pacific Salmon Commission

2015/2016
Thirty-First Annual Report

Pacific Salmon Commission

Established by Treaty between Canada and the United States March 18, 1985 for the conservation, management and optimum production of Pacific salmon

Thirty-First Annual Report 2015/2016

Vancouver, B.C.
Canada

February 2017

PACIFIC SALMON COMMISSION

ESTABLISHED BY TREATY BETWEEN CANADA
AND THE UNITED STATES OF AMERICA
MARCH 18, 1985

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Letter of Transmittal

In compliance with Article II, Paragraph 14 of the Treaty between the Government of Canada and the Government of the United States of America concerning Pacific salmon (the Treaty), it is my pleasure as Executive Secretary of the Pacific Salmon Commission to present my compliments to the Parties and to transmit the Thirty-First Annual Report of the Commission.

This report summarizes the activities of the Commission for the fiscal year April 1, 2015 to March 31, 2016. It reports on the results of the 2015 fishing season and on meetings of the Commission and its subsidiary bodies. Also included are the annual reports of the Northern and Southern Fund Committees, and an independent auditor's report on financial activities of the Commission during the fiscal year April 1, 2015 to March 31, 2016.

Additional details about the Commission's activities and the Treaty are available at www.psc.org.

Sincerely,

John Field

Mr. John Field
Executive Secretary

PACIFIC SALMON COMMISSION

OFFICERS for 2015/2016

Chair	Mr. Phil Anderson
Vice-Chair	Ms. Susan Farlinger

COMMISSIONERS

Canada	**United States**
Mr. John McCulloch	Mr. McCoy Oatman
Mr. Murray Ned	Mr. Charles Swanton
Mr. Bob Rezansoff	Mr. Bob Turner
Dr. Brian Assu	Mr. Ron Allen
Ms. Rebecca Reid	Mr. William F. Auger
Dr. Brian E. Riddell	Mr. Mike Clark
Mr. Paul Sprout	Mr. Rick Klumph

SECRETARIAT STAFF

Executive Secretary	Mr. John Field
Administrative Officer	Ms. Ilinca Manisali
Chief Biologist	Mr. Mike Lapointe

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INTRODUCTION

Since the early 20th century, Canada and the United States have discussed and collaborated on Pacific salmon conservation and management. Interception of Pacific salmon bound for rivers of one country in fisheries of the other has been a particularly important issue over the years. Scientific research identified a number of intercepting fisheries on species and stocks originating from Alaska, British Columbia, Washington, Oregon and Idaho. This research indicated that Alaskan fishers were catching some of the salmon bound for British Columbia, Idaho, Oregon and Washington. Canadian fishers off the West Coast of Vancouver Island were capturing some of the salmon bound for rivers of Washington and Oregon, while fishers in northern British Columbia were intercepting certain fish returning to Alaska, Washington, Oregon and Idaho. U.S. fishers were catching Fraser River salmon as they traveled through the Strait of Juan de Fuca and the San Juan Islands towards the Fraser River.

Cooperative management of stocks subject to interception became a matter of common concern to Canada and the United States, and governments desired a mechanism to enable each country to reap the benefits of its respective management and enhancement efforts. That mechanism is now provided through the Treaty Between the Government of Canada and the Government of the United States of American Concerning Pacific Salmon (hereafter the "Pacific Salmon Treaty" or "the Treaty"), which entered into force upon the exchange of instruments of ratification by the President of the United States of America and the Prime Minister of Canada on March 18, 1985.

The treaty, *inter alia*, established a) a bilateral fishery management organization known as the Pacific Salmon Commission (the Commission), and b) bilateral fishery management regimes for conservation and harvest sharing of salmon stocks. Each country (Party) retains jurisdictional management authority but must manage its fisheries in a manner consistent with the provisions of the Treaty. The Treaty is intended to enable bilateral conservation and enhancement to prevent overfishing, increase production, and ensure that each country receives benefits equivalent to its own salmon production. The Commission also serves as a forum for consultation between the Parties on their salmonid enhancement operations and research programs.

The Commission comprises four Commissioners (and alternates) from each country as the principle deliberative body. The Commission has also established numerous subsidiary committees, and four geographically oriented panels. The Panels report to the Commission and provide advice on the conservation and management of selected stocks of concern, with certain exceptions as noted below:

> Transboundary Panel: stocks originating from the Alsek, Stikine and Taku River systems.
>
> Northern Panel: stocks originating in rivers situated between Cape Suckling in Alaska and Cape Caution in British Columbia.
>
> Southern Panel: stocks originating in rivers located south of Cape Caution, other than Fraser River sockeye and pink salmon.
>
> Fraser River Panel: has special in-season regulatory responsibilities for stocks of sockeye and pink salmon originating from the Fraser River.
>
> Yukon River Panel: makes recommendations to authorities in Alaska and the Canadian government concerning the conservation and coordinated management of salmon originating in the Yukon River in Canada, but does not report to the Commission.

The panels review annual post-season reports, annual pre-season fishing plans and ongoing and planned salmonid enhancement programs of each country. They also provide recommendations to the Commission for development of fishery regimes in accordance with the objectives of the Treaty. These regimes, once adopted by the Commission and accepted by the Parties, are implemented by the relevant fishery management agencies in each country.

The Parties accord the Fraser River Panel special responsibility for in-season regulation of Fraser River sockeye and pink fisheries of Canada and the United States in southern British Columbia and northern Puget Sound, in an area designated as Fraser River Panel Area Waters. Scientific and technical work is conducted for the Panel by the Fishery Management Division of the Commission's Secretariat staff.

With long-term fishery arrangements in place through periodic amendment of the Treaty, the meeting agendas for the Commission have concentrated on implementation that will improve fisheries management and aid the countries' efforts to recover weakened stocks. These provisions include establishment of two bilaterally-managed restoration and enhancement funds, provisions to enhance bilateral cooperation, and improvements to the scientific basis for salmon management.

The Commission generally meets three times annually and conducts its business between meetings through its permanent Secretariat located in Vancouver, British Columbia. In the period April 1, 2015 to March 31, 2016, the Commission met on three occasions:

1. Fall Session
   October 26-30, 2015 – Suquamish, Washington

2. Post-Season Meeting of the Commission and Panels
   January 11-15, 2016 – Portland, Oregon

3. Thirty First Annual Meeting of the Commission
   February 8-12, 2016 – Vancouver, B.C.

This, the Thirty-first Annual Report of the Pacific Salmon Commission, provides a synopsis of the activities of the Commission and its subsidiary bodies during its Thirty-first fiscal year of operation, April 1, 2015 to March 31, 2016.

Activities of the Commission

PART I
ACTIVITIES OF THE COMMISSION

A. FALL SESSION OF THE PACIFIC SALMON COMMISSION
October 26-30 2015, Suquamish, WA.

The Commission held three bilateral sittings during the week.

The Parties exchanged lists of issues developed by the National Sections intended to guide the renegotiation of the Chinook Chapter (Annex IV, Chapter 3). The Commission agreed that the Parties would exchange responses about the lists before the January 2016 Post-Season meeting.

The Commission discussed and adopted the protocol for PST chapter renegotiations dated October 29, 2015 and agreed that a package of proposed Annex IV amendments should be ready for transmission to the Parties by December 31, 2017.

The Commission discussed and adopted revised Terms of Reference for the Chinook Interface Group (CIG), dated September 24, 2015.

The Commission adopted recommendations contained in three memoranda from the CIG to the Commission, dated October 29, 2015, which included: direction for the Chinook Technical Committee (CTC) and its Analytical Working Group about how to proceed regarding model improvements and work products; the Commission's response to the CTC regarding inclusion of calibration 1503 in CTC annual reports; and direction to the CIG to develop an action plan for the transition from the use of the current PSC Chinook model to the newly revised PSC Chinook model.

Mr. John Carlile, CTC Co-Chair, presented a report to the Commission entitled "CTC Model Improvement Tasks/Base-Period Calibration". The presentation included an overview of model improvement fund expenditures, of the history and rationale for performing a base-period calibration (BPC), and of the challenges involved in updating the BPC.

The Commission discussed national perspectives on the Selective Fisheries Evaluation Committee's (SFEC) reporting needs in response to SFEC's recommendation that the Commission develop a database whereby all information derived from Mark Selective Fisheries (MSFs) be formatted in the same way and housed in a single location so that it could be readily available for use.

The Commission agreed that once SFEC completed a lessons learned report, the Commission would further discuss possible ways to meet SFEC's reporting requirements.

The Commission received an interim report from the Fraser Strategic Review Committee, which was formed in 2013 and tasked with providing the PSC with advice about potential modifications to the hydroacoustic program on the Fraser River, a key element of the in-season management of Fraser River Sockeye and Pink salmon. The Committee was on schedule to provide a final report to the Commission in October 2016.

The Commission discussed national perspectives on enhancement reporting. The Commission agreed to further discuss how enhancement information was used and to come to an agreement about how to proceed at the January 2016 meeting.

Mr. Angus MacKay, Endowment Fund Coordinator, delivered a report about the PSC website redesign project and presented a beta version of the redesigned website. The Commission authorized the Secretariat to proceed with launching that site in or about December 2015.

Commissioner Rebecca Reid, Chair of the Finance and Administration Committee, delivered a report that focused on providing information to the Commission about a projected budget shortfall. The Commission directed the Committee to continue to work with the Secretariat to address the projected PSC budget shortfall, and to provide a progress report to the Commission at the January 2016 meeting.

The Commission discussed and adopted all Panel and Committee work plans for 2015/2016 with the proviso that in January 2016 the Commission would re-examine meetings proposed beyond February 2016 for potential budget constraints.

The slate of PSC officers for 2015/2016 was tabled and adopted.

B. POST-SEASON MEETING OF THE COMMISSION AND PANELS
January 11-15 2016, Portland, Oregon.

The Commission held two bilateral sessions during the meeting period.

Mr. Rick Klumph, the newly appointed U.S. Commissioner from Oregon, was welcomed to the Commission table.

Executive Secretary John Field reported on the Larry Rutter Memorial Award for Pacific Salmon Conservation established by the Joint Endowment Fund Committee. The award would be given to a person or organization that contributed to salmon conservation, Pacific Salmon Treaty (PST) implementation, or bilateral cooperation on salmon in general. The inaugural award would be presented in Vancouver at an evening reception to be held at the February 2016 PSC Annual Meeting.

The Commission agreed to discuss its possible involvement in the award process at the February 2016 session.

Mr. Carlile, Chinook Technical Committee (CTC) Co-Chair, reported on three of the CTC's assignments. He presented a memo about maturation rates and environmental variables used in the PSC Chinook Model, reported on the CTC's progress in carrying out the Chapter 3 (PST Chinook Chapter) performance evaluation, and updated the Commission about the CTC's work on its Phase 2 base period calibration assignment.

The Chinook Interface Group (CIG) reported on its efforts to develop an action plan for the Commission's transition from the existing Chinook Model to the new Chinook Model. The Commission agreed that the CIG would present a draft plan for transitioning the Commission to a new Chinook model at the February 2016 Commission meeting.

The Commission discussed the Parties' perspectives on the renewal of the Chinook Chapter, based on the exchange of issue lists in October 2015 and agreed to discuss the topic further in February 2016.

The Commission discussed national perspectives on the Parties' Treaty-mandated reporting of enhancement activities. The Executive Secretary was directed to coordinate with the Data Sharing Technical Committee to develop a proposal about how the Parties could share comparable online data on their respective enhancement activities. The proposal would be tabled at the February 2016 meeting.

Dr. Laurie Weitkamp of the Northwest Fisheries Science Center Newport Field Station, and a member of the PSC Coho Technical Committee, delivered a presentation entitled "Ocean conditions in the Northern California Current: warm water from the blob or El Nino is bad for Pacific NW salmon".

The Parties tabled their post-season fishing reports. The Commission discussed the reports and reviewed the 2015-fishing season, focusing on the fisheries management challenges that arose during the season.

In order to address concerns about the conditions and challenges experienced in 2015, the Commission directed the Committee on Scientific Cooperation (CSC) to collaborate with appropriate experts to develop a proposal for the annual collation of data on the environment, run size, fish condition, and other metrics that might reveal anomalies in salmon survival by the 2016 February PSC Annual Meeting.

Mr. Mark Saunders, CSC Vice-Chair, delivered a presentation entitled the "CSC report on the Feasibility of use of Parentage-Based Tagging for management of Pacific salmon." The Commission agreed that the August 2015 summary report from the CSC about Parentage Based Tagging and Radio Frequency Identification tags would be posted on the PSC website.

The Commission received a report from the Committee on Finance and Administration, which was working to finalize an operating budget for the Secretariat to be submitted for Commission approval at the February 2016 Commission meeting.

The Commission received progress reports on work plans from the Fraser River Panel, the Northern Panel, and the Southern Panel.

Mr. Tim Hamilton of the Twin Harbors Fish and Wildlife Advocacy appeared before the Commission to express concern about harvest impacts on Southern bound natural spawning salmon stocks.

C. PACIFIC SALMON COMMISSION ANNUAL MEETING
February 8-12 2016, Vancouver, B.C.

Three bilateral sessions were held during the week.

The Commission adopted a concept paper about perspectives on the renewal of the Chinook Chapter (Annex IV Chapter 3) based on an exchange of documents in January 2016.
The Commission discussed and approved the Chinook Interface Group (CIG) action plan dated February 10, 2016 for the PSC's transition from the existing Chinook model to the new Chinook model.

The Commission discussed and approved a list of metrics developed by the Chinook Interface Group to be used in the CTC's Chinook model calibration assessment.

The Commission approved a process recommended by the CIG whereby the PSC would provide guidance on Very High Priority Chinook Projects for 2017 and 2018 to the Endowment Fund Committees.

An Ad Hoc Subcommittee of the CTC reviewed an alternative model for predicting annual Chinook abundance and delivered a report to the Commission entitled "Ad-hoc Subcommittee of the CTC Response to CIG Questions Regarding Proposal: An Alternative to the PSC Chinook Model for Managing Southeast Alaska Fisheries, 2016-2018".

The Commission accepted two recommendations from the CIG about the work done by the Ad Hoc Chinook Subcommittee, namely that: 1) the CTC would revise the maturity rates and environmental variables used in the Chinook model consistent with the findings in PSC report TCCHINOOK (16)-1 for use in the 2016 management cycle; and 2) the report of the ad hoc CTC subcommittee on the winter troll model would be revised for technical errors and subsequently posted as part of the meeting's attendant documents.

Mr. John Carlile, Chinook Technical Committee (CTC) Co-Chair, reported on the CTC's Chinook model improvement tasks, including its work on maturation rates and environmental variable analyses/recommendations, and on progress made on the CTC Chapter 3 performance evaluation assignment.

Canadian Commissioner Rebecca Reid delivered an update about the Canadian WCVI troll fishery mitigation program (Annex IV, CH.3, pa.4) under which the Government of Canada received $30 million from the Government of the United States as part of the 2008 Chinook Chapter renegotiations.

Executive Secretary John Field presented the "Proposal for sharing enhancement data as per the Pacific Salmon Treaty, prepared by the Secretariat, February 3, 2016." The proposal included information about Treaty requirements on enhancement reporting (Article V), about recent Commission discussions regarding Article V, and about the status of national databases and data sharing.

The Commission approved the Executive Secretary's proposal regarding enhancement activities reporting, namely that: a) the Commission confirmed that Article V reporting requirements were met through the current electronic exchange of data; b) communication between the Parties, the Commission, and the Panels already occurs through established channels; and c) a revised annual work plan template was adopted to highlight new issues for the Commission's attention.

The Commission discussed and approved a proposal regarding its participation in the Larry Rutter Memorial Award process pending input from the Joint Fund Committee.

Mr. Angus Mackay, Enhancement and Restoration Fund Manager, presented the "Annual Report of the Southern Boundary Restoration and Enhancement Fund and the Northern Boundary and Transboundary Rivers Restoration and Enhancement Fund for the year 2015".

The Commission received and adopted the report of the Standing Committee on Finance and Administration, including the budget for fiscal year 2016/2017.

Mr. Alex Wertheimer and Mr. Mark Saunders, Committee on Scientific Cooperation (CSC) Chair and Vice Chair delivered the Committee's response to the Commission's decision to charge the CSC with developing a proposal for the annual collation of data on the environment, run size, fish condition and other metrics that might reveal anomalies in salmon survival.

The Commission agreed that the CSC's February 10, 2016 proposal to monitor environmental anomalies would be reconsidered at the 2016 Fall Meeting. In the meantime, the CSC was directed to begin to work on documenting 2015 anomalies in order to guide Commission decisions at the 2016 Fall Meeting.

Dr. Gary Morishima, Co-Chair of the Selective Fisheries Evaluation Committee presented an overview of SFEC's lessons learned report, which was published as Pacific Salmon Commission Technical Report 34.

The Commission received annual reports on work plans from the Transboundary Panel, the Southern Panel, the Fraser River Panel, the Committee on Scientific Cooperation, and the Selective Fisheries Evaluation Committee.

Activities of the Standing Committees

ACTIVITIES OF THE STANDING COMMITTEES

A. MEETINGS OF THE STANDING COMMITTEE ON FINANCE AND ADMINISTRATION

The Standing Committee on Finance and Administration met on several occasions throughout 2015 (on July 28, August 17, September 22, October 8, October 28, December 16), as well as at the 2016 Post-Season and Annual Meeting. The Committee addressed a number of issues and made recommendations for the Commission's consideration as noted below.

Budget proposal for FY 2016/2017 and forecast through FY 2018/2019

The Committee discussed the financial challenges facing the Commission and the Secretariat over the coming years. The Committee has worked with the Secretariat over the last year to examine potential cost reductions for balancing the budget through 2018/2019. As reported in October 2015, the Committee analyzed the impact of these reductions by applying a risk framework using a number of factors including: conservation/biological, stakeholders, external economic, internal, and treaty implementation. While the Committee was unable to agree on any specific reduction, there was agreement that any program reduction would impact the effective delivery of programs by the PSC.

Accordingly, the Committee recommends that the Commission adopt the proposed budget for FY2016/2017 as shown in Appendix D.

Unfunded pension liability

The Parties have worked with the Secretariat to identify supplementary funding over the next three years to mitigate the unfunded pension liability and relieve budgetary pressure on the Commission. Supplementary contributions totaling $660,000 ($330,000 per Party) may be forthcoming over the next three years with the first payment as early as spring, 2016. The United States will endeavor to make these payments in three annual installments, subject to available funding. Canada has been invoiced for a 3-year portion of the liability (i.e., $330,000) and payment is expected prior to March 31, 2016.

For reporting purposes, appropriate adjustments to revenue will be made in the fiscal year that the funds are received.

Capital Asset Replacement Reserve Fund (CARRF)

The Committee recommends that a Capital Asset Replacement Reserve Fund (CARRF) is established to ensure regular availability of funds for lifecycle replacement of capital assets, while giving the Secretariat the flexibility to use these for prescribed needs and to prioritize purchases within a fixed budget.

The CARRF would function similarly to a savings account: a set amount would be credited to the CARRF each year from the General Fund. Capital asset purchases would be charged directly to the CARRF and would not impact the General Fund. The Committee may, from time to time, review the CARRF balance and determine whether additional top-ups are necessary or whether (in the case of an unreasonably high balance) an amount should be returned to the General Fund. The Commission would make the final decisions on such changes to the CARFF, based on recommendations from the F&A Committee.

To establish the CARRF (for FY2017/18 and beyond), the Committee recommends changes to the financial regulations as outlined in Attachment 2.

Test fishing

The PSC separates test fishing program costs and associated revenues from the ordinary Secretariat budget. Nonetheless, the Committee routinely monitors cash flow in PSC test fishing operations and has discussed the results of the 2015 season for Secretariat-administered test fisheries. Due to constraints on PSC catches imposed by low abundance and conservation concerns, the Secretariat incurred a test fishing program deficit of $778,000 during the season ($1.4 million in expenses vs. $622,000 in fish sale revenue). As a result, the PSC Test Fishing Revolving Fund (or TFRF, which receives surplus revenues and pays for operational deficits) has been reduced to approximately $115,000.

Moving forward, there is always uncertainty in Fraser sockeye returns pre-season. This complicates budget forecasting for test fishing operations. Nonetheless, the Committee has worked with the Fraser River Panel and the Secretariat to forecast certain things:

- 2016: Fraser sockeye returns are not expected to be large in 2016, and thus program deficits are probable in the coming fiscal year. These deficits would range from $170,000 to $890,000 depending on the test fishing program approved by the Fraser River Panel and fish abundance.
- 2017: Parent year sockeye escapement in 2013 suggest that the 2017 Fraser sockeye return should be much better than 2016, and 2017 also yields pink salmon returns to the Fraser River. Thus potential net revenues in 2017 would range from a potential $475,000 surplus (the 2013 program generated a surplus of approximately $275,000) to a potential deficit exceeding $1,000,000 if returns were very poor and test fishing catches were restricted.
- 2018: This represents the dominant cycle year for Fraser sockeye, and relatively large returns to the Adams system should provide opportunities for increased national harvest and potentially higher PSC test fishing harvest/revenues.

Prior to 2018, the Secretariat must meet the in-season monitoring needs of the Fraser River Panel while securing adequate funding for program costs. Accordingly, the Secretariat has worked with the Panel and the Committee to a) develop options for reduced test fisheries in 2016; b) solicit supplemental contributions to the TFRF from the Parties; c) begin long-term planning for cost-effective test fisheries; and d) revise the PSC test fishing policy on annual program design and revolving fund access. This PSC test fishing policy must be approved by the Commission, which would ideally happen before June 2016.

The Committee and the Fraser River Panel will work with the Secretariat to reach agreement on a test fishing policy proposal for the Commission in spring 2016. If successful, then intersessional Commissioner approval could happen via email or other appropriate means.

B. MEETINGS OF THE STANDING COMMITTEE ON SCIENTIFIC COOPERATION

The Committee on Scientific Cooperation (CSC) presented the results of the Parentage-based Tagging (PBT) report and CSC review of the report to the Commission at the January 2016 Commission meeting, completing a multi-year initiative. The CSC concluded that PBT was not cost effective as a replacement for coded-wire tagging at this point. However, due to the rate of technological developments and decreasing costs in this field, the CSC recommended reviewing the potential of PBT again in three to five years. The PBT report and the CSC review were posted on the PSC website.

At the January 2016 Post Season Meeting, the Pacific Salmon Commission directed that "By the 2016 Annual Meeting, the CSC shall collaborate with appropriate experts and develop a proposal for annual collation of data on the environment, run size, fish condition, and other metrics that may reveal anomalies in salmon survival." The CSC developed an outline of possible actions that could be undertaken taken to address this directive and presented them to the Commission at the February 2016 Annual Meeting.

The CSC submitted proposals to the Fund Committees' RFP process for reviewing the potential for the use of new generation Radio Frequency Identification tags for coastwide salmon tagging programs.

The CSC supported two successful Bayesian Statistics workshops designed to provide the PSC science community with a training opportunity in Bayesian statistics. The workshops were held in Seattle and Nanaimo and were conducted by Dr. Catherine Michielsens, PSC Director of Modelling and Data Management.

The Coho Technical Committee and Southern Panel proposed a workshop on the identification of alternative approaches to the PSC management of Coho fisheries, a logical extension of the review of technologies for PBT and RFID. The CSC planned to participate in the workshop if the proposal was funded by the Southern Fund.

The CSC discussed PSC participation in the International Year of the Salmon, a broad initiative being explored by the North Pacific Anadromous Fish Commission. The International Year of the Salmon was envisioned as an intensive burst of internationally coordinated, interdisciplinary research focused on salmon across the northern hemisphere and their relation to people.

C. MEETINGS OF THE NORTHERN AND SOUTHERN FUND COMMITTEES

The Northern and Southern Fund Committees have agreed that given the congruent nature of their agendas, their decision to combine the funds into a single master account for investment management purposes, and the efficiencies involved with respect to interaction with the fund managers, it was appropriate to meet together as a Joint Fund Committee at least once a year for an annual financial review and investment manager interviews. The Joint Fund Committee met in person on November 17th and 18th, 2015

At the Spring meetings of the Northern and Southern Fund Committees (held separately in 2015), Mr. David Geisbrecht of Aon Hewitt presented the 2014 Q4 investment performance report to the Northern Fund and a month later the 2015 Q1 report to the Southern Fund. At both meetings Mr. Geisbrecht discussed Aon Hewitt's downgrading of the Brandes global equity strategy from "Qualified" (formerly "Hold") to "Sell". This change follows a downgrade from "Buy" to "Hold" in July 2012. The rationale for the downgrade was Brandes' disappointing performance since 2008/9, in particular in down markets when their particular investment strategy would be expected to do well. More critically for future results, Aon Hewitt had concerns regarding the high degree of professional turnover, significant asset outflows from the strategy, and, the business direction of the firm. Brandes has been on close watch by the Committee for quite some time and Committee members on both Funds resolved to revisit the issue in November 2015 when they would meet in joint session. Mr. Geisbrecht also presented the results of negotiations with Brandes and with the Fund's EAFE manager LSV concerning a change to their fee structures. A new performance-based fee structure had been negotiated by Aon Hewitt on the Fund's behalf, such that only the achievement of specified performance thresholds would trigger incremental fee increases above a base fee level. The Fund Committees were appreciative of these efforts and instructed Aon to implement the changes immediately. Each Committee also received a presentation on the Fund's audited financial statements and administration costs for 2015 from PSC Secretariat Controller, Ms. Ilinca Manisali. The Committees approved the administration budgets as presented.

The Committees met in joint session for their annual financial meeting, investment manager performance review, and manager interviews on November 17th and 18th, 2015. To open the meeting Ms. Kamila Geisbrecht of Aon Hewitt presented the third Quarter report for 2015.

The Committee then received the in-person presentations from its managers LSV (international equities manager), RARE (infrastructure manager), Invesco (real estate manager) and Brandes (global equity manager). For the second year running, Aon Hewitt provided the managers ahead of time with specific questions on their performance developed with Committee input. Managers were expected to address these during their presentations. The Committee was generally satisfied with the managers' reports, with the exception of Brandes. Following the interviews and during Ms. Geisbrecht's summarization, Committee members discussed a proposal to fire Brandes and initiate a search for a new manager for this portion of the portfolio. Eventually it was decided to adjourn the meeting and revisit the Brandes issue on the following day.

The Fund Committee reconvened their annual meeting the next day on November 18th. A unanimous motion was passed to instruct Aon Hewitt to terminate Brandes; initiate the liquidation of Northern and Southern Fund assets held by Brandes, arrange the transfer of those funds to a passive global manger (BlackRock) to be held in the interim, and, immediately begin a search for a replacement manager. A manager search sub-committee comprised of two members from each Fund, one Canadian and one US member, was struck. Aon committed to providing the sub-committee with a short-list of potential candidates in February 2016 with a view to arranging interviews with top finalist candidates in the following month or months.

The next agenda item concerned the "very high priority chinook" projects proposed for funding in 2016. PSC Executive Secretary Mr. John Field provided a summary overview of "very high priority chinook" actions to date. The Fund Committee members discussed the program's process issues at great length. The Northern Fund Committee took the position that the group of "very high priority chinook" projects should be subject to the same Northern Fund technical review as all the other detailed proposals and that ultimately they would be considered for funding on their merits in competition with all the others seeking Northern Fund grant support. The Southern Fund expressed their interest in reviewing the results of the Northern Fund's technical analysis. The Committees agreed to meet again jointly in February 2016 to resolve the 2016 "very high priority chinook" project funding issues.

As an information item for the Northern Fund Committee, Mr. John Field described a proposal approved by the Southern Fund Committee to establish a Larry Rutter Memorial Award in Pacific Salmon Conservation - with the inaugural award to be made in February 2016.

Mr. Angus Mackay presented a proposal to the Fund Committees to sponsor a second Endowment Fund communications opportunity that would provide messaging and achieve awareness-raising among the Fund's core user-group. The evening event would once again take the form of one or more brief Fund related presentations followed by a social event at the PSC's annual meeting to be held at the Hyatt Regency hotel in Vancouver in February 2016. The Fund Committees approved the proposal.

Northern Fund Committee Meetings

The Northern Fund Committee met three times during 2015.

February 17th, 2015
- Final selection of projects for funding in 2015. This meeting was held at the Listel Hotel in Vancouver.

April 22nd, 2015
- Investment performance report to end of Q4, 2014.
- Update to Aon's rating of Fund's global equity manager, Brandes.
- Manager performance fee discussion.
- Potential for a Call for Proposals for 2016.
- Fund financial obligations in 2016.

- Consideration of Year 2 very high priority Chapter 3 chinook projects.
- Timetable.

September 30th, 2015

- First round selection of project concepts to be invited to proceed to Stage Two detailed proposals.

Southern Fund Committee Meetings

The Southern Fund Committee met three times during 2015.

February 12th, 2015

- Final selection of projects for funding in 2015. This meeting was held at the Embassy Suites Hotel in Portland.
- Consideration of pressing coho treaty implementation priorities.
- Increase in Southern Fund contribution towards the very high priority chinook projects.

May 20th, 2015

- Investment performance report to end of Q1, 2015.
- Update to Aon's rating of Fund's global equity manager, Brandes.
- Manager performance fee discussion.
- Salish Sea Marine Survival Program annual report.
- Potential for a Call for Proposals for 2016.
- Fund financial obligations in 2016.
- Consideration of Year 2 very high priority Chapter 3 chinook projects.
- Proposal to establish a Larry Rutter Memorial Award in Pacific Salmon Conservation.
- Timetable.

September 23rd, 2015.

- The members of the Southern Fund Committee (absent Andy Thomson) were accompanied on a Fraser River field trip by PSC Executive Secretary John Field, Fund staff Angus Mackay and Victor Keong, PSC Hydroacoustics manager Fiona Martens and, CRITFC support staff Laura Gephart. The purpose of the field trip was for Committee members to visit both the PSC Mission hydroacoustics station and the Qualark hydroacoustic facility on the Fraser River. Both of these operations have been the recipients of multiple Southern Fund grant awards over the years and continue to be top priority projects recommended to the Committee for funding by the Fraser River Panel. The trip was accomplished via jet boat from the government wharf at Mission. PSC and DFO hydroacoustics staff were on hand at both stops to describe the operation of their facilities and the results achieved with Southern Fund financial support.

September 24th, 2015.

- First round selection of project concepts to be invited to proceed to Stage Two detailed proposals.

Activities of the Panels

PART III
ACTIVITIES OF THE PANELS

A. FRASER RIVER PANEL

At the January meeting the Panel received reports reviewing the 2015 fishing season, addressed Total Allowable Catch (TAC) calculations, and looked at several items pertaining to test fishing which included an implementation summary, funding challenges, design of the 2016 test fishing program and next steps relating to Fraser River Panel test fishing program. The Panel also provided a summary document reviewing the consultant's report on the comparison of the Mission and Qualark hydroacoustic facilities and made recommendations for future work. The Panel was also asked to fill out a questionnaire regarding the planning model. At the February meeting the Panel received reports from Canada on 2015 escapements, 2016 pre-season forecasts for Fraser River sockeye, and finalized the TAC and allocation status for 2015. Additional reports were provided regarding Washington sockeye pre-season forecast and historical returns, a progress report on the Panel's work in support of the Fraser Strategic Review Committee and test fishing issues regarding the 2016 schedule, test fishing policy and dates for a test fishing workshop.

B. NORTHERN PANEL

The bilateral Northern Panel met at the PSC Post Season meeting in Portland, Oregon from January 11–15, 2016. There were no bilateral Northern Panel meetings during the PSC Annual Meeting in February.

At the Portland meeting, fishery managers of both parties presented information to the Panel on Northern Boundary Area fisheries for 2015 and discussed compliance with provisions of the 2009 PST Agreement. The Panel reviewed the Northern Boundary Technical Committee's (NBTC) update of the 2013 and 2014 sockeye salmon and 2015 pink salmon run reconstruction, and allowable and actual harvests of sockeye salmon and pink salmon, as specified in Annex IV, Chapter 2. The NBTC also provided a preliminary reporting of the 2015 allowable and actual harvest of sockeye salmon and a current balance of the carry forwards. The Panel reviewed the status of the Northern Fund and received a general update about the type of projects being funded.

Key issues for possible renegotiation of Chapter 2 of the Treaty were discussed and then revised with three future discussion points: (1) Potential new language in Chapters 2 & 5 of the Treaty directing the Parties to address inseason changes in run timing and abundance; (2) A coho salmon model that predicts inseason northern B.C. coho abundance; and (3) An alternate approach to accounting for the catch of Skeena and Nass river sockeye salmon that accommodates changes in run timing and effort, while respecting historical exploitation rates and potential conservation issues.

C. SOUTHERN PANEL

No report was finalized for publication during this reporting period.

D. TRANSBOUNDARY PANEL

The Transboundary Rivers Panel (Panel) held two series of bilateral sessions in conjunction with the Pacific Salmon Commissions meetings, the first being the 2015 Post-Season meeting in Portland (January 11-15, 2016) while the second was the 2016 Annual meeting in Vancouver (February 8-12, 2016).

At its Post-Season meeting, Fishery managers, enhancement project coordinators, scientific and technical staff from both the United States and Canada presented information to the Panel pertaining to treaty-related fishery performance, overall status of stocks and enhancement activities in the Transboundary Rivers treaty area for the 2015 season. The Panel received presentations on the result of 2014 Taku and Stikine

Enhancement Production Plans (2015 fry releases resulting from 2014 egg takes). On review the, Panel Co-Chairs approved the results as presented (which included the release of 2.7 million sockeye salmon fry into Tahltan Lake and absence of a release into Tuya Lake resulting from Canadian modification of the Stikine Enhancement Production Plan). Following the completion of the annual post-season review, the remainder of the meeting session was dedicated to bilateral discussions and exchange of documents in support of the renegotiation of the Transboundary Rivers Chapter as a component of the 2018 Pacific Salmon Treaty renewal.

The Transboundary Rivers Panel's annual meeting involved the review of pre-season outlooks for Alsek, Taku and Stikine River salmon stocks, a review of overage and underage considerations pertaining to the performance of 2015 fisheries, sockeye salmon enhancement programs planned for 2016, in-season assessment program plans for Taku River Chinook as well as an interim harvest share arrangement for Taku River coho salmon. On review, the Co-Chairs approved bilateral acceptance of the results of the 2011 Stikine Enhancement Production Plan (consistent with the requirements set out within Chapter 1, the Panel reviewed the Parties performance relative to sockeye salmon enhancement program activities initiated 5 years earlier and determined that no harvest share adjustments were warranted), the 2016 Taku River Enhancement Production Plan, and the 2016 Stikine Enhancement Production plan. The majority of the meeting session focused on a continuation of discussions and exchange of documents pertaining to the renegotiation of the Transboundary Rivers Chapter (building on information exchanged during the January 2016 meeting).

Review of 2015 Fisheries and Treaty-Related Performance

PART IV
REVIEW OF 2015 FISHERIES AND TREATY-RELATED PERFORMANCE

A. FRASER RIVER SOCKEYE SALMON

Preseason Planning

1. Pre-season forecasts were for a median run size (p50 level, Appendix B) of 6,778,000 Fraser River sockeye salmon, and 14,455,000 Fraser River pink salmon.

2. Pre-season forecasts of migration parameters included a 96% diversion rate for Fraser River sockeye through Johnstone Strait (the Panel chose to adopt an 80% diversion rate for modelling) and a 56% diversion rate for Fraser River pink salmon. Pre-season planning was based on the p25-level abundance forecast for Early Stuart sockeye due to concern over the unusual age composition of the forecast (over 95% age 5 return) and median level forecasts for all other sockeye management groups. Forecast abundances and expected Area 20 50% migration dates were: Early Stuart 16,000 (July 8), Early Summer run 837,000 (August 1), Summer-run 4,675,000 (August 7), Late-run 1,236,000 (August 17), for a total of 6,764,000 Fraser Sockeye, and 14.5 million pink salmon (August 28).

3. Pre-season spawning escapement goals were 16,000 Early Stuart, 334,800 Early Summer-run, 1,636,300 Summer-run and 494,400 Late-run sockeye for a total of 2,481,500 sockeye salmon and 6,000,000 pink salmon (Table 1). The goals for each sockeye management group were established by applying Canada's Spawning Escapement Plan (Appendix B) to the forecasted run size. For pre-season planning purposes, Early Stuart was managed to a 10% low abundance exploitation rate (LAER).

4. Management Adjustments (MAs) of about 11,000 Early Stuart, 335,000 Early Summer-run, and 285,000 Summer-run sockeye were added to the spawning escapement targets to increase the likelihood of achieving the targets. The MA for Early Stuart was based on the historical median differences between lower and upriver escapement estimates. The Early Summer-run MA was adopted by the Panel as an intermediate value between the environmental forecast model estimate and the historical median differences between estimates. The MA for the total Summer-run was calculated from a weighted average of the historical median proportional Management Adjustment (pMA) for Harrison (2004-2014; 0.39) and the historical median pMA for the non-Harrison Summer-run component (0.08), using p50 forecast abundances for the weighting (Appendix F, Table F2).

5. For Late-run sockeye, the Panel assumed a continuation of the early upstream migration behaviour and associated high mortality that has occurred since 1996. The Panel adopted a pMA of 0.95 (equivalent to an MA of 471,000 sockeye) for pre-season planning, based on the weighted average of the historical median pMA of Birkenhead component (0.18) and the non-Birkenhead pMA (1.27), using p50 forecasted abundances for the weighting (Appendix F, Table F2). The pMA for the non-Birkenhead Late-run component was the odd year historical median.

6. The projected Total Allowable Catch (TAC) of Fraser River sockeye salmon for International sharing purposes based on the median forecasted abundances and agreed deductions was 2,683,000 sockeye (Table 1), of which 16.5% (443,000 sockeye) were allocated to the United States (U.S.). The projected TAC for pink salmon was 8,244,000 fish, of which 25.7% (2,119,000 pinks) were allocated to the U.S.

7. Pre-season model runs indicated it was unlikely the Summer-run TAC could be fully harvested due to fisheries constraints required to achieve spawning escapement targets for co-migrating Early Summer-run and Late-run stocks. Though less constrained than sockeye harvest, model runs also indicated that

neither country was expected to harvest its full share of the pink salmon TAC due to fisheries constraints required to achieve Late-run sockeye salmon escapement targets.

8. The Panel adopted the Management Plan Principles and Constraints and the 2015 Regulations (Appendices C and D).

In-season Management Considerations

9. With the exception of Early Stuart, returns of both sockeye and pink salmon were substantially below median pre-season forecasts (Early Summer-run: 53% below median forecast, Summer-run: 65% below median forecast, Late-run: 86% below median forecast and pink salmon: 60% below median forecast).

10. Fraser River discharge remained near historical record low levels for the duration of the season while river temperatures remained high throughout the season and broke historical records in early July (Figure 6). As a result of the extreme environmental conditions, model predicted differences between potential spawning escapement and the actual number of spawners on the spawning grounds (DBE) were larger than predicted pre-season for the Early Stuart and Summer-run management groups, but slightly less than predicted for the Early Summer-run group. However, commercial fisheries directed at Fraser River sockeye were most constrained by the low returns, such that by August 11, the available TAC for all management groups except Late-run had been caught (Table 1).

11. Marine migration timing (Figure 3) was 4 days later for Summer-run and Late-run sockeye and 5 days earlier than expected for Fraser River pink salmon (Figure 4), causing the pink and sockeye migrations to overlap more than expected pre-season. The pink salmon migration also declined precipitously after August 28 (Area 20 timing) which decreased the run size and further constrained pink directed fisheries.

Run Size, Catch, Escapement and Migration patterns

12. Returns of adult Fraser sockeye totalled 2,006,000 fish (Tables 7 and 8), less than half the return of adult fish in 2011 (5,124,000), the primary brood year. With exception of 2007, 2008 and 2009, this return was the smallest over the last 50 years. Divided into management groups, adult returns totalled 29,000 Early Stuart, 285,000 Early Summer-run, 1,574,000 Summer-run and 118,000 Late-run sockeye.

13. Catches of Fraser River sockeye salmon in all fisheries totalled 377,000 fish, including 187,000 fish caught by Canada, 151,000 fish caught by the U.S. and 38,000 fish caught by test fisheries (Table 7). With the exception of 600 sockeye caught in a domestic Chinook test fishery, all of the Canadian catch occurred in First Nations FSC fisheries (Food, Social and Ceremonial). In Washington, commercial catches totalled 44,000 Fraser sockeye, mostly caught in Treaty Indian fisheries (33,000 fish). Fisheries in Alaska harvested approximately 104,400 Fraser sockeye. The overall harvest rate was 19% of the run, which is among the smallest in recent years, along with 2009 and 2013 (Figure 8).

14. DFO's near-final estimates of spawning escapements to streams in the Fraser River watershed totalled 1,189,000 adult sockeye (Tables 7 and 8). This was less than half the brood year escapement of 2,580,000 adults, but similar to the average escapement on this cycle. By management group and for this cycle line, spawning escapements in 2015 were one fourth of the average escapement to the Early Stuart system since 1939 but was the first increase on this cycle line since 1987, similar to the average Early Summer escapement, more than 50% above the average Summer-run escapement and the lowest Late-run escapement on record since 1939 (Figure 10). There were 687,000 effective female spawners in the Fraser watershed, representing an overall spawning success of 97% with below

average spawning success in the Early Stuart, but near or above average in the other management groups.

15. The total run-size estimate of 5,779,000 Fraser River pink salmon was the smallest since 1999. Catches totalled 463,000 fish, with 83,000 caught by Canada, 331,000 by the U.S. and 49,000 in test fisheries (Table 7). This catch represents an exploitation rate of 8% (Table 8), which is one sixth of the exploitation rate in 2013 and the lowest since 2001.

16. Between 2003 and 2007, the run size of Fraser River pink salmon was the adopted in-season estimate while spawner abundance was calculated by subtracting total catch from this run size. Since 2009, estimates of pink salmon passage have been obtained through the hydroacoustics system at Mission. In 2015, the run size of Fraser River pink salmon was calculated by adding the total catch of pink salmon below Mission (384,000 fish) to the Mission passage estimate (5,395,000 fish, Table 6), while the spawner abundance (5,316,000 fish) was calculated by subtracting total catch from the run size.

17. Marine migration timing (Figure 3) was 2 days earlier than pre-season expectations for Early Stuart and Early Summer-run and 4 days later for Summer-run and Late-run sockeye. No delay in the migration behaviour for Late-run sockeye was detected prior to their upstream migration. The marine migration timing of Fraser pink salmon was 5 days earlier than expected (Figure 4), causing the pink and sockeye migrations to overlap more than expected pre-season. The pink salmon migration also declined precipitously after August 28 (Area 20 timing) which decreased the run size and constrained pink directed fisheries planning.

18. The overall Johnstone Strait diversion rate was 69% for sockeye and 38% for pink salmon, compared to pre-season forecasts of 96% and 55%, respectively (Figure 5).

Achievement of Objectives

19. In order of descending priority, the goals of the Panel are to achieve the targets for spawning escapement, international sharing of the TAC, and domestic catch allocation.

20. In-season management decisions are based on targets for spawning escapement, which are represented in-season by potential spawning escapement targets (i.e., spawning escapement targets plus MAs). In-season estimates of potential escapement (i.e., Mission escapement minus all catch above Mission) were similar to the targets for all management groups: Early Stuart sockeye (10% under), Early Summer-run (11% over), Summer-run (14% under) and Late-run sockeye (6% under) (Table 11).

21. Spawning ground estimates of Fraser sockeye abundance totalled 1,189,000 adults, which is 31% below the post-season target. Spawner abundance was severely below the target for Early Stuart sockeye (65% under), similar to the target for Early Summer-run (1% over), below the target for Summer-run (33% under) and severely below the target for Late-run sockeye (42% under) (Table 12). The Early Stuart exploitation rate (3%) was below the low abundance exploitation rate (LAER) of 10%. For Late-run, the exploitation rate (17%) was below the 20% LAER. For Early Stuart and Late-run sockeye, the spawning escapement target equaled the run size, so the escapement target could only be obtained in the absence of catches and any difference between estimates. The Summer-run exploitation rate (19%) was higher than the 10% LAER for this management group. Even in the absence of catches, due to the observed difference between estimates, the Summer-run run size was insufficient to attain the escapement target, but reduced catches could have increased the spawning escapement to be closer to the target.

22. There was an International TAC (Total Allowable Catch) of 36,000 Fraser sockeye (Table 13), based on the calculation method set out in Annex IV, Chapter 4 of the Pacific Salmon Treaty. The

Washington catch of 46,000 Fraser sockeye was 40,000 fish more than their 16.5% share. The total Canadian catch of 187,000 Fraser sockeye, which excludes the ESSR catch of Weaver sockeye, was 29,000 fish less than their in-season catch goal (83.5% of 36,000 TAC fish + 187,000 AFE fish). In these calculations, the TAC is fixed on the date that Panel control of the last U.S. Panel Area was relinquished (October 3 in 2015), while catches are post-season estimates.

23. In terms of domestic U.S. allocation objectives for Fraser sockeye, Treaty Indian fishers were 31,000 fish above and All Citizen fishers were 9,000 fish above their shares of the U.S. TAC (Table 14).

24. The spawning escapement for Fraser pink salmon was 247,000 fish over the 5,069,000 target (Table 12), and the exploitation rate was 8%.

25. There was a TAC of 661,000 Fraser pink salmon (Table 13), based on the calculation method set out in Annex IV, Chapter 4 of the Pacific Salmon Treaty. The Washington catch of 331,000 Fraser pink salmon was 161,000 fish more than their 25.7% share of the international TAC and the Canadian catch of 83,000 was 408,000 fish less than their catch goal.

26. Regarding domestic U.S. allocation objectives for Fraser pink salmon, Treaty Indian and All Citizen fishers were respectively 102,000 and 59,000 fish over their shares of the U.S. TAC (Table 15).

27. By-catches of non-Fraser sockeye and pink salmon in commercial net fisheries regulated by the Fraser River Panel totalled 1,170 sockeye and 322,000 pink salmon (Table 16). Catches of other Fraser and non-Fraser salmon species included 5,500 chinook, 1,100 coho, 130 chum and 20 steelhead.

Allocation Status

28. By Panel agreement there is a U.S. payback of 900 Fraser River sockeye to carry forward to 2016 (Table 17) but no payback owed for pink salmon.

B. 2015 POST-SEASON REPORT FOR UNITED STATES SALMON FISHERIES OF RELEVANCE TO THE PACIFIC SALMON COMMISSION

Preliminary 2015 Southeast Alaska Fisheries

Northern Boundary Area Fisheries

District 104 Purse Seine Fishery

The 2009 Pacific Salmon Treaty (PST) Agreement calls for abundance based management of the District 104 purse seine fishery. The agreement allows the District 104 purse seine fishery to harvest 2.45 percent of the Annual Allowable Harvest (AAH) of Nass and Skeena sockeye salmon prior to Alaska Department of Fish and Game (ADFG) statistical week 31 (referred to as the treaty period). The AAH is calculated as the total run of Nass and Skeena sockeye salmon minus either the escapement requirement of 1.1 million (200,000 Nass and 900,000 Skeena) or the actual in-river escapement, whichever is less.

The District 104 purse seine fishery opens by regulation on the first Sunday in July. In 2015, the initial opening was July 5 (week 28). The pre-week 31 fishing plan for District 104 was based on the preseason Canadian Department of Fisheries and Oceans (DFO) forecast returns of approximately 4,227,000 Nass and Skeena sockeye salmon. Using this forecast, the 2015 pre-week 31 AAH was approximately 76,600 Nass and Skeena sockeye salmon in the District 104 purse seine fishery. In the 2015 Treaty period (Alaska statistical weeks 28-30), 43,873 sockeye were harvested during two 15-hour openings in Week 28; one 15-hour opening in Week 29, and 15 and 10-hour openings in week 30 (Table 1). A total of 98 purse seine vessels fished at some time in the district during the Treaty period. In past years 60% to 80% of Treaty-period sockeye salmon have been of Nass and Skeena origin, therefore we would anticipate between 26,000 and 35,000 Nass and Skeena sockeye may have been harvested in the District 104 purse seine fishery during the 2015 Treaty period. The final number of Nass and Skeena sockeye salmon harvested, and the actual harvest by stock, will not be available until harvest, escapement, and stock composition estimates are finalized for the year.

In 2015, a total of 4,017,996 pink salmon, 494,286 sockeye salmon, 216,741 chum salmon, 66,427 coho salmon, and 8,690 Chinook salmon were harvested in the District 104 purse seine fishery (Table 1). The number of days that the fishery was open was near the treaty period (1985-2014) average (Figure 1), but the number of boats fishing was below average throughout the season (Figure 2). Chinook salmon could not be retained until the second opening in week 31 in the District 104 purse seine fishery, but the total harvest was above average due to strong catches in weeks 31 and 32 (Figure 3). Sockeye salmon harvests were below average early in the season (Figure 4) and the treaty period (week 28-30) harvest of 43,873 was only 43% of the 1985–2014 average. The total sockeye salmon harvest of 494,286 was near the 1985–2014 average of 482,000 fish. Harvests of coho salmon were below average in most weeks (Figures 5) and the overall harvest was only 56% of the long-term average. Pink salmon harvests were also below average throughout the season and the overall harvest was only 46% of the long-term average (Figure 6).

Chum salmon harvests were below average early and late in the season, but were near average from weeks 30 to 32 (Figure 7).

Since the Pacific Salmon Treaty was signed in 1985, the number of hours open, boats fishing and boat-days fished in the pre-Week 31 annex period in District 104 are down 55%, 61% and 84% respectively compared to the averages in the pre-treaty 1980-1984 period (Table 2). The total pre-week 31 Treaty-period sockeye salmon harvest is also down 47%. The seine fleet moves freely between districts as various species are harvested, so seining opportunities elsewhere affect the effort and catch in District 104.

Table 1. – Catch and effort in the Alaska District 104 purse seine fishery, 2015.

Week/ Opening	Start Date	Chinook	Sockeye	Coho	Pink	Chum	Boats	Hours
28	7/5	0	3,948	2,590	6,451	3,927	11	15
28B	7/9	0	2,439	2,238	6,313	4,475	14	15
29	7/12	0	5,844	5,694	16,170	6,287	11	15
30	7/19	0	15,987	2,668	74,652	7,905	7	15
30B	7/23	0	15,655	4,797	121,628	14,015	33	10
31	7/26	0	46,059	7,051	265,114	16,993	38	15
31B	7/31	2,302	88,391	15,201	782,374	36,993	63	39
32	8/4	1,242	57,736	5,523	579,758	25,142	47	39
32B	8/8	4,167	87,125	8,824	723,298	32,604	59	39
33	8/12	849	50,617	3,723	436,577	17,785	43	39
33B	8/16	46	40,593	2,206	290,342	14,725	45	39
34	8/21	0	49,976	1,891	320,507	16,307	35	39
35	8/24	0	17,511	2,117	246,043	10,200	31	39
35B	8/28	84	12,405	1,904	148,769	9,383	29	39
							Permits Fished	
Weeks 28-30		0	43,873	17,987	225,214	36,609	39	70
Weeks 31-35		8,690	450,413	48,440	3,792,782	180,132	92	327
Total		8,690	494,286	66,427	4,017,996	216,741	98	397

Table 2. - Fishing opportunity, effort, and sockeye salmon harvest prior to week 31 in the District 104 purse seine fishery, 1980–2015.

Year	Hours Fished	Individual Permits Fished	Days Fished (1d=15hrs)	Approximate Boat-Days	Sockeye Harvest	Sockeye Catch per Boat-Day
1980	207	244	13.8	2,877	266,273	93
1981	132	212	8.8	1,108	185,188	167
1982	117	255	7.8	1,435	213,150	149
1983	108	241	7.2	1,211	170,306	141
1984	132	174	8.8	805	103,319	128
1985	84	141	5.6	502	100,590	200
1986	108	194	7.2	968	91,320	94
1987	90	134	6	457	72,385	158
1988	108	210	7.2	994	248,789	250
1989	84	135	5.6	438	157,566	360
1990	42	171	2.8	276	169,943	615
1991	41	134	2.7	243	98,583	406
1992	29	108	1.9	142	79,643	561
1993	45	171	3	343	163,189	476
1994	55	84	3.7	202	158,524	783
1995	58	109	3.9	218	71,376	328
1996	31	113	2.1	128	215,144	1,684
1997	56	159	3.7	409	572,942	1,402
1998	32	78	2.1	89	17,394	196
1999	30	38	2	44	7,664	174
2000	81	66	5.4	192	48,969	255
2001	50	95	3.3	182	203,090	1,115
2002	72	44	4.8	124	26,554	215
2003	52	40	3.5	97	84,742	875
2004	107	24	7.1	102	30,758	302
2005	68	38	4.5	93	35,690	382
2006	95	39	6.3	117	89,615	766
2007	50	68	3.3	136	112,135	824
2008	33	17	2.2	22	6,262	281
2009	72	38	4.8	95	15,971	168
2010	55	21	3.7	39	4,617	118
2011	84	29	5.6	77	25,280	329
2012	75	30	5.0	93	18,300	196
2013	46	36	3.1	59	13,102	222
2014	60	101	4	260	115,015	442
2015	70	39	4.7	100	43,873	439
Avg. 80-84	139	225	9	1,487	187,647	136
Avg. 85-15	63	87	4	234	99,969	472
% Change	-55%	-61%	-55%	-84%	-47%	248%

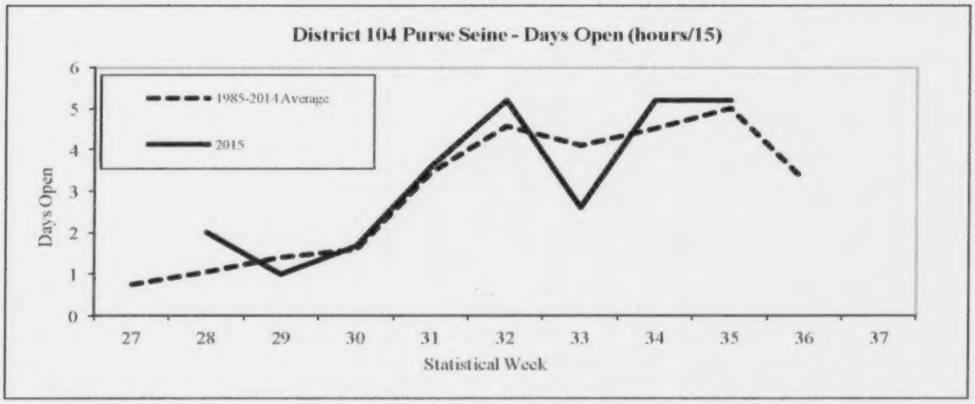

Figure 1. – Days open by week in the District 104 purse seine fishery, 2015.

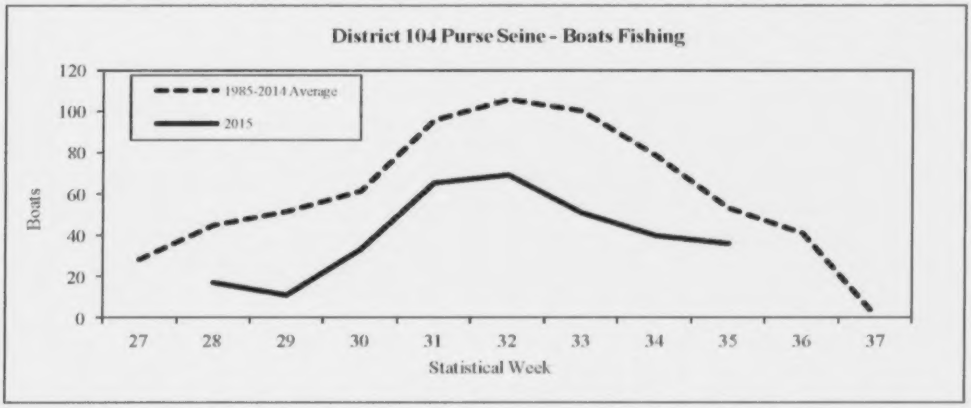

Figure 2. – Number of boats fishing by week in the District 104 purse seine fishery, 2015.

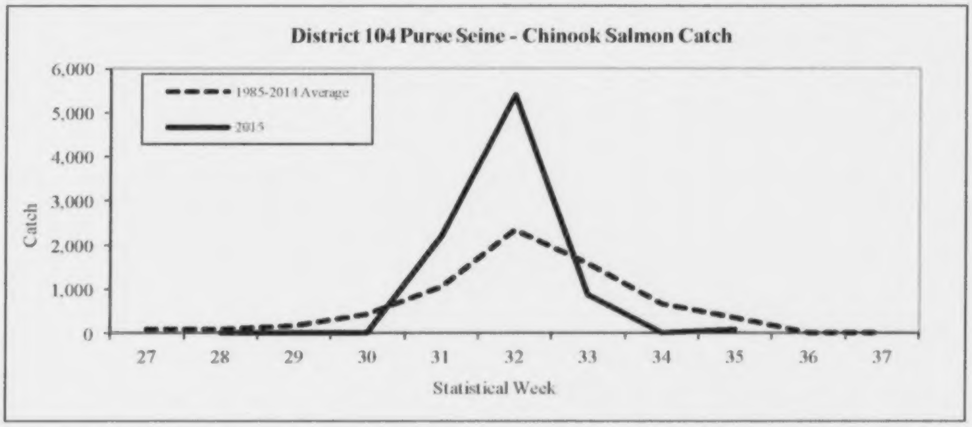

Figure 3. – Chinook salmon harvest by week in the District 104 purse seine fishery, 2015.

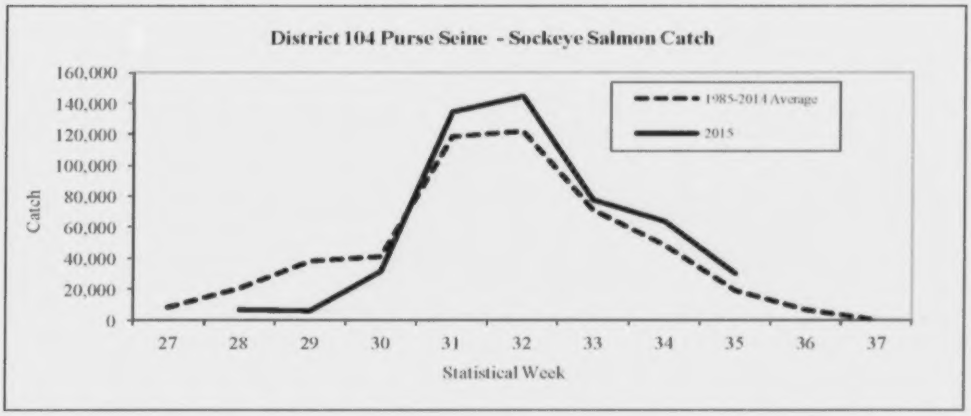

Figure 4. – Sockeye salmon harvest by week in the District 104 purse seine fishery, 2015.

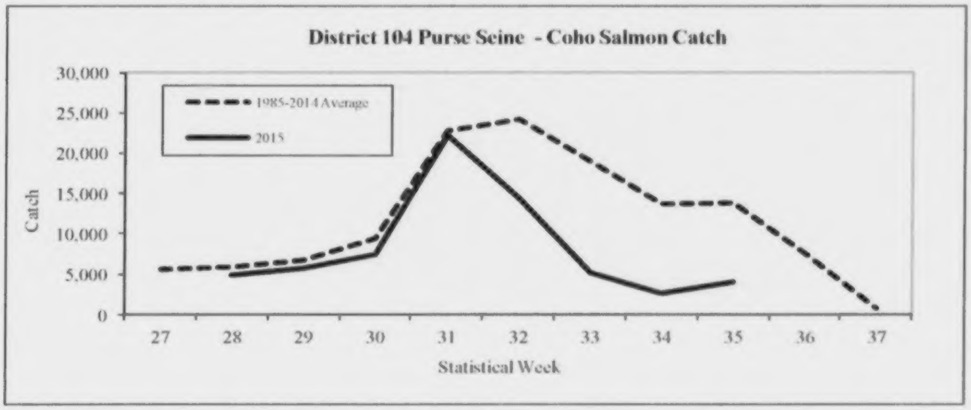

Figure 5. – Coho salmon harvest by week in the District 104 purse seine fishery, 2015.

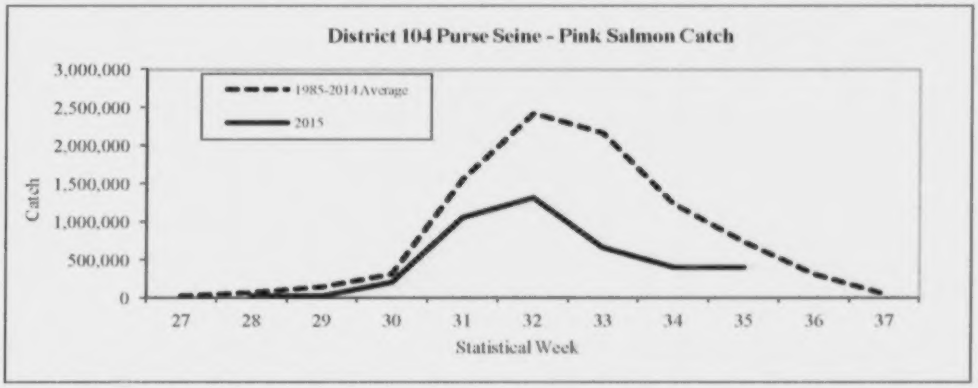

Figure 6. – Pink salmon harvest by week in the District 104 purse seine fishery, 2015.

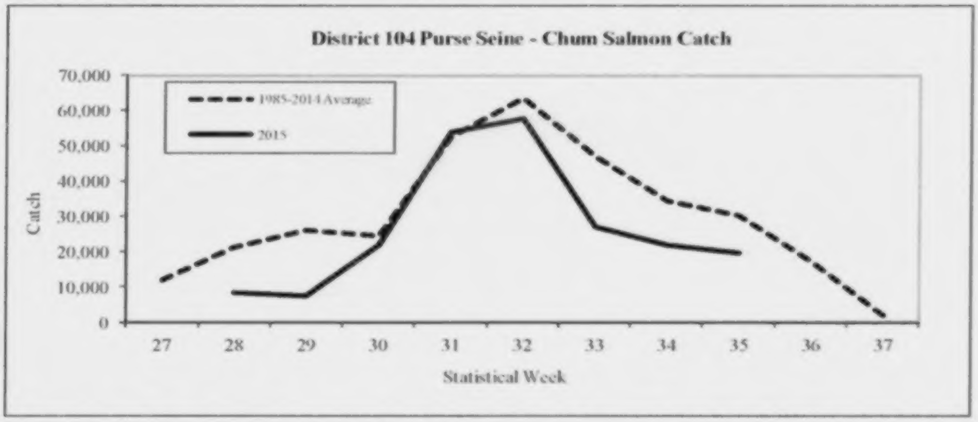

Figure 7. – Chum salmon harvest by week in the District 104 purse seine fishery, 2015.

District 101 Drift Gillnet Fishery

The 2009 PST agreement calls for abundance based management of the District 101 (Tree Point) drift gillnet fishery. The agreement specifies a harvest of 13.8 percent of the AAH of the Nass River sockeye run. The AAH is calculated as the total run of Nass sockeye salmon minus either the escapement requirement of 200,000 or the actual in-river escapement, whichever is less. The return of Nass sockeye salmon was forecast at 727,000 in 2015 which, minus an escapement goal of 200,000, would result in an AAH of about 527,000. Using this forecast, the 2015 allowable harvest in the District 101 drift gillnet fishery was approximately 72,700 Nass River sockeye salmon.

The District 101 drift gillnet fishery opens by regulation on the third Sunday in June, which was June 21 in 2015. During the early weeks of the fishery, management is based on the run strength of Alaska wild stock chum and sockeye salmon and on the run strength of Nass River sockeye salmon. Beginning in the third week of July, when pink salmon stocks begin to enter the fishery in large numbers, management emphasis shifts by regulation to that species. By regulation, the District 101 Pink Salmon Management Plan begins the third Sunday in July and sets gillnet fishing time in this district in relation to the District 101 purse seine fishing time. Beginning in Week 35 (August 23) management was based on the strength of wild stock fall chum and coho salmon.

The District 101 drift gillnet fishery opened Sunday June 21 (week 26) in 2015. The number of days the fishery was open was near average all season (Figure 8), but the number of boats fishing during weekly openings was below average throughout the season (Figure 9). The total number of individual boats fishing during the season was 71, which was 65% of the 1985-2014 average of 110 boats. A total of 28,155 sockeye salmon were harvested, which was only 23% of the 1985-2014 average of 123,017 fish and was the lowest harvest since the inception of the Pacific Salmon Treaty (Table 3). Harvests of sockeye salmon were below treaty period averages throughout the entire season (Figure 10). The cumulative sockeye salmon harvest prior to the initiation of the PSMP in Week 30 was 13,225 fish, or about 47% of the season's total sockeye salmon harvest. The final number of Nass River sockeye harvested at Tree Point will not be available until catch, escapement, and stock composition estimates are finalized for the 2015 season. In past years approximately 65% of the District 101 gillnet sockeye harvest has been of Nass River origin, therefore we would anticipate that approximately 18,000 Nass River sockeye may have been harvested in the District 101 gillnet fishery in 2015.

Coho salmon harvests were below average for most weeks of the season and the total harvest of 39,768 fish was 80% of the treaty period average (Figure 11). Pink salmon harvests were poor all season and the total harvest of 148,141 fish was only 28% of average (Figure 12). Chum salmon harvests were above average in most weeks of the fishery and the total harvest of 452,759 fish was 151% of average (Figure 13). Chinook salmon harvests were near average throughout the season (Figure 14).

Table 3. – Weekly harvest and effort in the Alaska District 101 commercial drift gillnet fishery, 2015.

Week	Start Date	Chinook	Sockeye	Coho	Pink	Chum	Boats	Hours
26	6/21	623	3,472	1,290	2,975	13,076	40	96
27	6/28	275	5,504	505	6,469	17,299	41	96
28	7/5	112	2,684	392	11,271	33,465	36	96
29	7/12	74	1,565	855	10,371	52,738	38	96
30	7/19	58	2,222	1,866	26,665	73,798	44	96
31	7/26	51	2,960	1,204	20,862	78,493	49	96
32	8/2	29	2,783	1,869	26,157	36,819	45	96
33	8/9	42	4,395	2,233	20,378	22,538	38	96
34	8/16	3	831	1,137	9,814	9,011	21	48
35	8/23	6	949	2,725	10,007	30,234	33	96
36	8/30	8	514	4,341	2,533	37,705	41	96
37	9/6	7	192	6,646	606	27,151	40	96
38	9/13	1	64	6,947	32	12,830	36	96
39	9/20	1	18	6,224	1	6,588	20	96
40	9/27	0	2	1,534	0	1,014	14	96
Total		1,290	28,155	39,768	148,141	452,759	73	1,392
1985-2014 Avg.		1,490	123,017	49,907	520,493	300,082	111	1,363

Table 4. – Sockeye salmon harvest in the Alaska District 101 gillnet fishery, 1985 to 2015, and comparison of harvest and effort (boats, hours, and boat-hours) between weeks 26 and 35 when sockeye salmon are most abundant in this district.

Year	Total Sockeye Harvest	Catch and Effort between Weeks 26-35			
		Sockeye Harvest	Individual Permits Fished	Total Hours Open	Boat-Hours[1]
1985	173,100	159,021	155	1,032	106,209
1986	145,699	143,286	201	960	109,490
1987	107,503	106,638	178	615	64,104
1988	116,115	115,888	192	756	93,072
1989	144,936	130,024	178	1,023	117,465
1990	85,691	78,131	159	840	70,421
1991	131,492	123,508	136	984	80,064
1992	244,649	243,878	118	1,080	94,159
1993	394,098	390,299	149	1,032	102,814
1994	100,377	98,725	144	984	74,408
1995	164,294	151,131	140	1,008	82,512
1996	212,403	175,569	130	1,104	86,108
1997	169,474	152,662	138	1,008	81,672
1998	160,506	159,307	124	1,044	87,358
1999	160,028	158,268	118	1,032	80,424
2000	94,651	94,399	95	912	49,488
2001	80,041	62,129	76	1,020	46,874
2002	120,353	106,360	76	1,008	42,528
2003	105,263	96,921	71	1,104	44,008
2004	142,357	141,395	61	1,104	42,400
2005	79,725	75,875	70	1,104	40,864
2006	62,770	53,048	48	840	28,265
2007	66,822	50,642	56	1,032	33,713
2008	34,113	30,672	54	936	31,961
2009	69,859	69,325	65	1,080	43,432
2010	62,680	61,987	68	1,008	45,135
2011	88,618	87,744	87	840	47,627
2012	62,506	40,518	85	1,008	43,695
2013	54,575	45,413	92	1,104	59,437
2014	55,828	49,722	73	1,095	44,551
2015	28,155	27,365	71	912	35,946
Average 1985-2014	123,017	115,083	110	987	64,845

[1] Boat-hours equals the sum of all weekly estimates of boat-hours: boats fished multiplied by open hours. Boat-hours does not equal individual permits fished multiplied by total open hours.

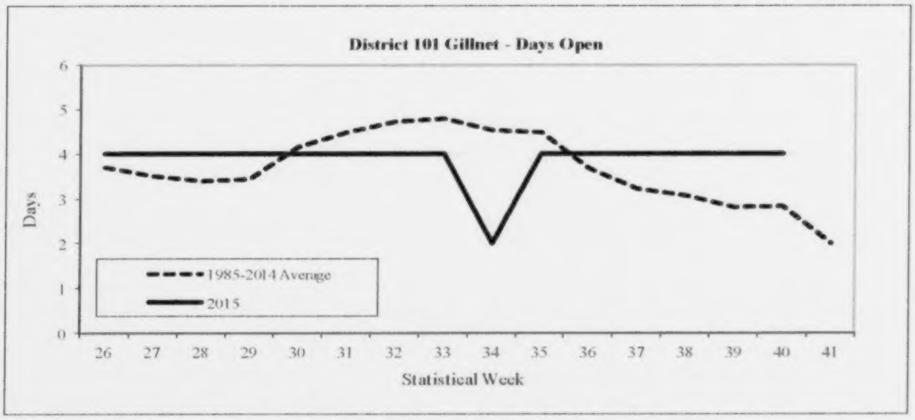

Figure 8. – Days open by week in the District 101 drift gillnet fishery, 2015.

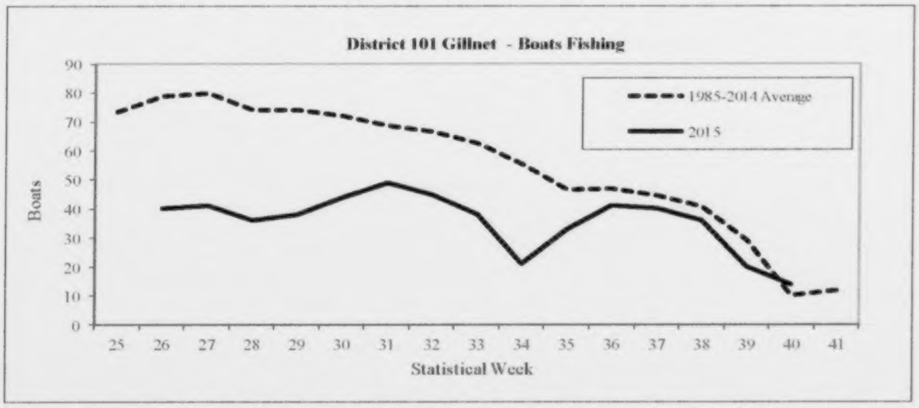

Figure 9. – Number of boats fishing by week in the District 101 drift gillnet fishery, 2015.

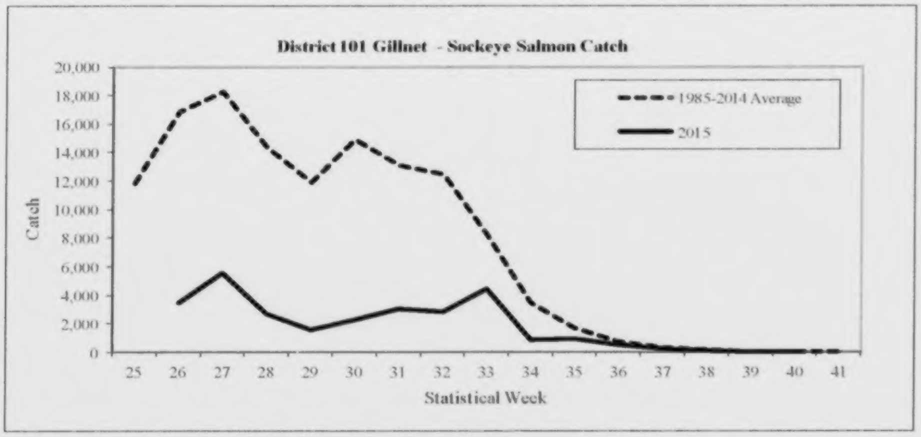

Figure 10. – Sockeye salmon harvest by week in the District 101 drift gillnet fishery, 2015.

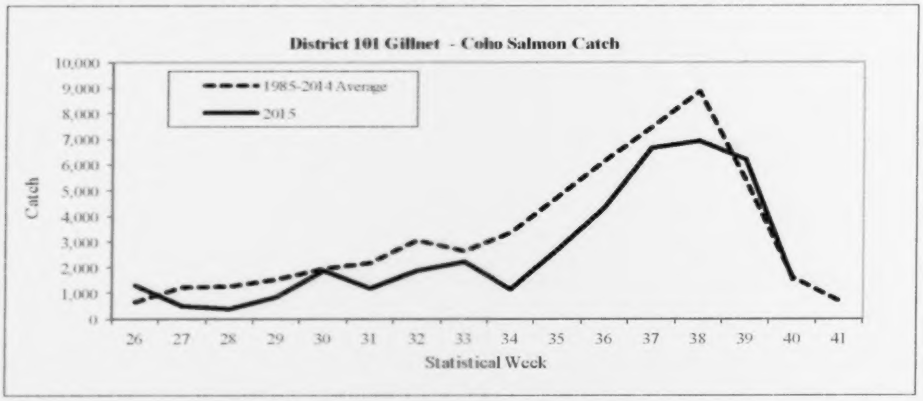

Figure 11. – Coho salmon harvest by week in the District 101 drift gillnet fishery, 2015.

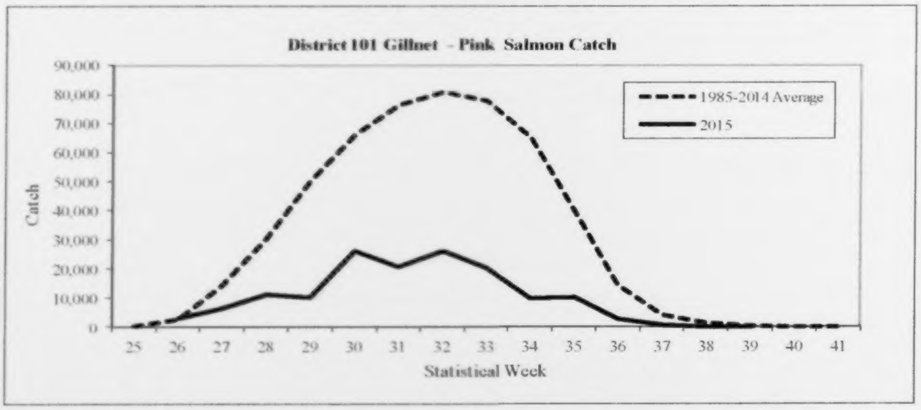

Figure 12. – Pink salmon harvest by week in the District 101 drift gillnet fishery, 2015.

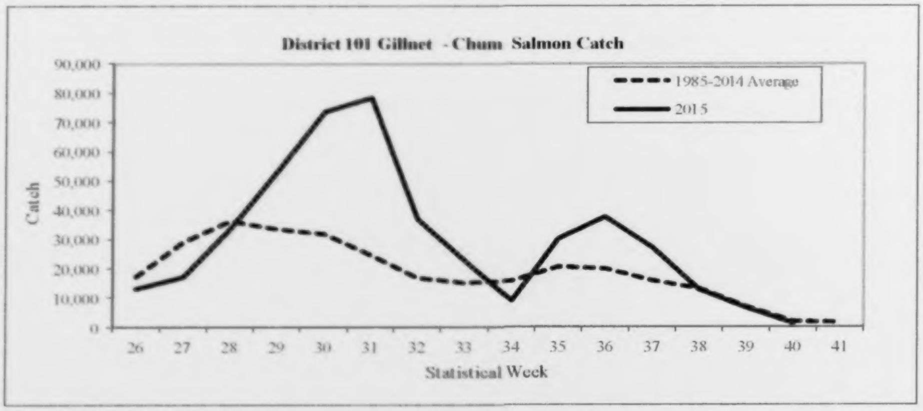

Figure 13. – Chum salmon harvest by week in the District 101 drift gillnet fishery, 2015.

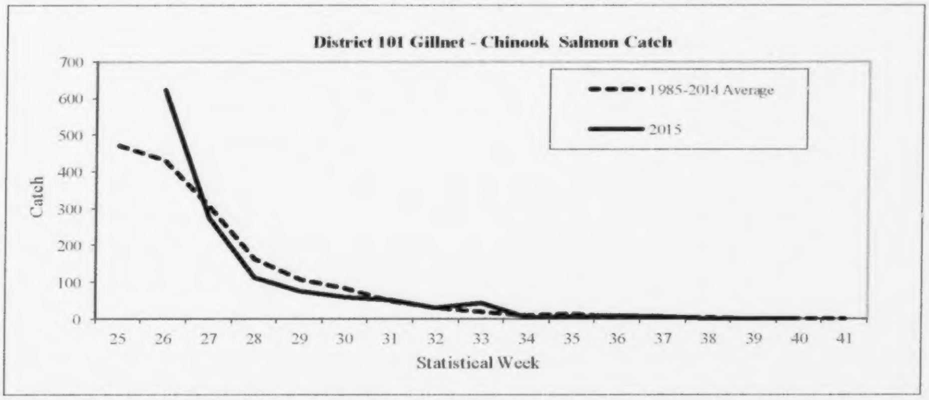

Figure 14. – Chinook salmon harvest by week in the District 101 drift gillnet fishery, 2015.

Pink, Sockeye, and Chum Salmon Escapements

Escapements of pink salmon were generally very strong throughout northern Southeast Alaska, but were below average throughout much of southern Southeast Alaska. The total 2015 Southeast Alaska pink salmon escapement index of 12.39 million index fish ranked 18th since 1960. Biological escapement goals were met in the Southern Southeast and Northern Southeast Inside subregions, and exceeded in the Northern Southeast Outside Subregion in 2015 (Table 5). On a finer scale, escapements met or exceeded management targets for all 15 districts in the region and for 42 of the 46 pink salmon stock groups in Southeast Alaska. The Southern Southeast Subregion includes all of the area from Sumner Strait south to Dixon Entrance (Districts 101–108). The escapement index value of 4.3 million was within the escapement goal range of 3.0 to 8.0 million index fish, but was the lowest index since 1988 and the lowest odd-year escapement index since 1979. The pink salmon harvest of 12.5 million in the Southern Southeast Subregion was only 53% of the recent 10-year average. The overall Southeast Alaska pink salmon harvest of 35.1 million fish was below the 2005–2014 average of 40.6 million, and was the lowest odd-year harvest since 1997.

Table 5. – Southeast Alaska 2015 pink salmon escapement indices and biological escapement goals by subregion (in millions).

Subregion	2015 Pink Salmon Index	Biological Escapement Goal Lower Bound	Biological Escapement Goal Upper Bound
Southern Southeast	4.30	3.0	8.0
Northern Southeast Inside	5.25	2.5	6.0
Northern Southeast Outside	2.84	0.75	2.50
Total	12.39		

Sockeye salmon returns throughout Southeast Alaska were generally strong in 2015, and escapement targets were met for 12 of the 13 sockeye salmon systems with formal escapement goals. The Hugh Smith Lake adult sockeye salmon escapement was 21,300, which was above the optimal escapement goal range of 8,000 to 18,000 adult sockeye salmon. Based on the expanded peak foot survey count, the escapement of sockeye salmon into McDonald Lake was estimated to be 70,200 fish, which was within the sustainable escapement goal range of 55,000 to 120,000.

For summer-run chum salmon, lower bound sustainable escapement goals were met for all three subregions in Southeast Alaska. In Southeast Alaska, runs are broken into summer and fall runs. The Southern

Southeast summer-run chum salmon stock group is composed of an aggregate of 15 summer-run chum salmon streams on the inner islands and mainland of southern Southeast Alaska, from Sumner Strait south to Dixon entrance, with a sustainable escapement goal of 62,000 index spawners (based on the aggregate peak survey to all 15 streams). Summer chum salmon escapements were excellent at most index streams in southern Southeast Alaska, and the index of 115,000 in 2015 was well above goal (Figure 15).

Cholmondeley Sound is the only area in southern Southeast Alaska with a formal escapement goal for fall chum salmon. Fall chum salmon runs are monitored in Cholmondeley Sound through aerial surveys at Disappearance and Lagoon creeks. The escapement index of 73,000 was well above the upper bound of the sustainable escapement goal range of 30,000 to 48,000 index spawners (based on the aggregate peak survey to both streams; Figure 16).

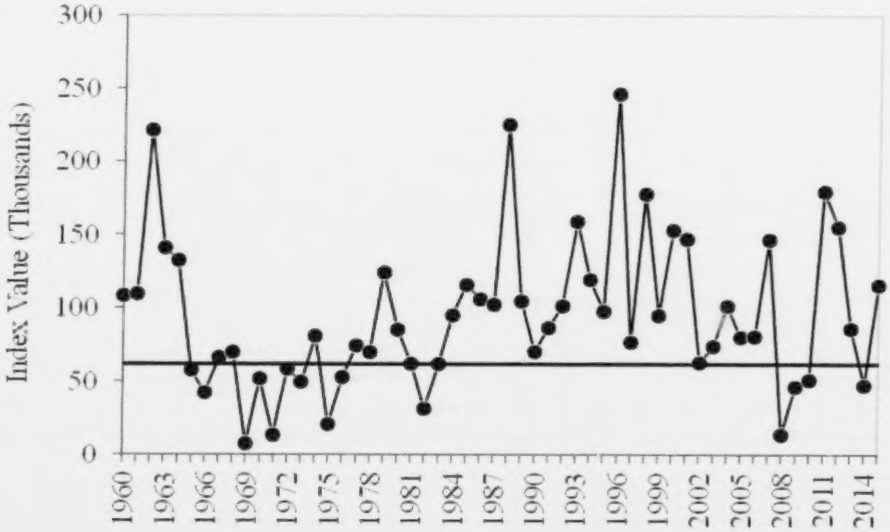

Figure 15. – Observed escapement index value by year (solid circles) and the sustainable escapement goal threshold of 62,000 index spawners (horizontal line) for wild summer-run chum salmon in the Southern Southeast Subregion, 1980–2015.

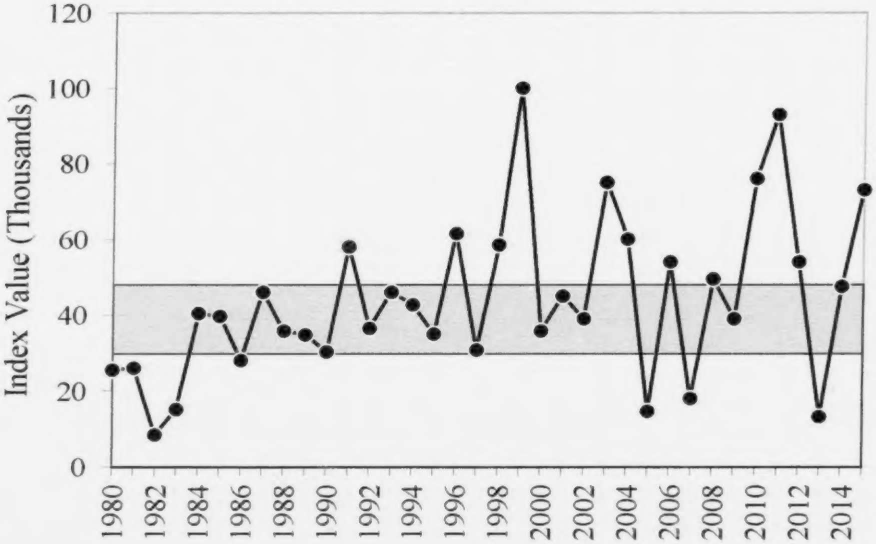

Figure 16. – Observed escapement index value by year (solid circles) and the sustainable escapement goal range of 30,000 to 48,000 index spawners (shaded area) for Cholmondeley Sound fall-run chum salmon, 1980–2015.

Transboundary Area Fisheries

Stikine River Area Fisheries

Commercial troll and drift gillnet fisheries directed at harvesting Stikine River Chinook salmon did not occur in 2015. The initial preseason forecast for large Chinook salmon returning to the Stikine River was approximately 30,200 fish, which was not large enough to allow for directed Chinook salmon fisheries in District 108. Since terminal Chinook salmon run projections were not available early in the season due to river conditions that negatively affected the stock assessment program, the management of District 108 commercial fisheries was based on the preseason forecast. The preliminary postseason run reconstruction for large Chinook salmon returning to the Stikine River was 27,000 fish, with an escapement of 21,300 fish; within the goal range of 14,000 to 28,000 fish.

The 2015 preseason forecast for sockeye salmon returning to the Stikine River was 171,200 fish, which was below the recent 10-year average of 179,300 fish. The 2015 forecast included approximately 50,400 wild Tahltan (29%), 31,100 enhanced Tahltan (18%), 34,000 enhanced Tuya (20%), and 55,700 mainstem (33%) sockeye salmon. Due to the near identical return timing of the Tahltan Lake and Tuya Lake stocks, any open fishing periods in District 108, and to a lesser extent in District 106, are determined by the inseason abundance estimate of the Tahltan Lake return. Typically, the Tahltan Lake and Tuya Lake sockeye salmon run timing peaks in statistical week 27 (June 30–July 6) through the Districts 106 and 108 fisheries. During an average Tahltan Lake run significant numbers of sockeye salmon could be present as early as statistical week 24 (June 9–15) and as late as statistical week 31 (July 28–August 3). The 2015 returns of local area sockeye salmon stocks were expected to be average.

The District 106 and 108 drift gillnet fisheries opened for an initial two-day period on Monday, June 15 (week 25). Surveys of the gillnet fleet did not indicate an abundance of sockeye salmon significantly above the preseason forecast and no additional fishing time occurred. The fisheries opened for three days on June 21 (week 26). Surveys of the fleet indicated near average catch rates and very low effort, therefore a 24-

hour extension occurred. In week 27, the fisheries opened for an initial four–day period, but no additional time was granted due to uncertainty over sockeye salmon abundance. In week 28 the fisheries opened for an initial three-day period. The inseason abundance estimate for Stikine River sockeye salmon was 123,400 fish, which was below the preseason forecast, but above the prior week's estimate. Combined with below average effort and above average sockeye salmon abundance observed in the fisheries there was a 24-hour extension. Sockeye salmon abundance estimates continued to increase through the remainder of the season and the Districts 106 and 108 drift gillnet fisheries continued to open for at least three days weekly through mid-August (Figures 17 and 24). The final inseason assessment for Stikine River sockeye salmon was 189,000 fish and included 40,100 wild Tahltan, 31,800 enhanced Tahltan, 51,800Tuya, and 65,500 Mainstem sockeye salmon.

Districts 106 and 108 were managed based on pink salmon abundance during the month of August. Three day openings occurred in weeks 32 through 34 and the final opening for pink salmon management was for two days in week 35 (Figures 17 and 24). In early September, management focus switched to coho salmon and the fisheries continued to be open for two or three days weekly through the remainder of the fisheries. The number of boats participating in the District 106 fishery was below average early in the season, above average from mid-July to mid-August (weeks 30–33), and below average through the end of the season (Figure 18). The number of boats participating in the District 108 fishery followed a similar pattern to District 106 (Figure 25).

During the 2015 season, 224,816 pink salmon, 121,921 sockeye salmon, 232,390 chum salmon, 112,561 coho salmon, and 2,723 Chinook salmon were harvested in the District 106 drift gillnet fishery (Table 6). Chinook salmon harvests were generally above average from late June through mid-July (Figure 19) and were comprised of 64% Alaska hatchery origin fish. Sockeye salmon harvests were below average in the first two weeks of the season, but then increased to above average in most weeks through the end of August (Figure 20). The total sockeye salmon harvest of 121,921 fish was 144% of the recent 10-year average and 14,000 were estimated to be of Stikine River origin. Harvests of coho salmon were above average in most weeks through early August, but were well below average for the remainder of the season. The overall harvest of 112,561 coho salmon was 78% of the recent 10-year average of 144,000 fish (Figure 21). Pink salmon harvests were also below average in many weeks (Figure 22), and the overall harvest of 224,816 fish was 78% of the recent 10-year average. Chum salmon harvests were above average primarily due to very strong harvests from mid-July to early August (Figure 23).

During the 2015 season, 35,926 pink salmon, 22,896 sockeye salmon, 166,009 chum salmon, 30,153 coho salmon, and 13,845 Chinook salmon were harvested in the District 108 drift gillnet fishery (Table 7). Although there were no directed Chinook salmon fisheries early in the season, harvest was above average from late June to late July and was comprised of 94% Alaska hatchery origin fish (Figure 26). An estimated 1,438 Stikine River large Chinook salmon were harvested in District 108 from weeks 18 through 29 by subsistence, sport, troll, and drift gillnet fisheries. Primarily due to very few boats targeting sockeye salmon in District 108, sockeye salmon catches were well below average during the peak weeks of the season (Figure 27) and the total sockeye salmon harvest of 22,896 fish was only 51% of the recent 10-year average. An estimated 16,100 fish, or 70% of the harvest, were estimated to be Stikine River sockeye salmon. The overall coho salmon harvest of 30,153 was very close to the recent 10-year average of 31,929 fish (Table 7, Figure 28). Pink salmon harvests were below average most of the season and the overall harvest was 67% of the recent 10-year average (Figure 29). Chum salmon harvests were below average early in the season, but above average after mid-July and the overall harvest of 166,009 fish was just over the recent 10-year average (Figure 30).

Table 6. – Weekly salmon harvest in the Alaskan District 106 commercial drift gillnet fisheries, 2015. Harvests do not include Blind Slough terminal area harvests.

Week	Start Date	Chinook	Sockeye	Coho	Pink	Chum	Boats	Days	Boat Days
25	15-Jun	202	1,686	1,245	168	2,580	35	2	70
26	21-Jun	409	7,279	5,875	4,111	9,689	42	4	168
27	28-Jun	480	12,016	11,268	13,156	6,833	58	4	232
28	5-Jul	606	20,220	11,311	13,217	19,242	51	4	204
29	12-Jul	398	11,913	11,768	14,303	26,716	58	3	174
30	19-Jul	364	18,151	9,567	46,124	34,928	61	3	183
31	26-Jul	89	15,550	7,838	43,296	46,651	62	3	186
32	2-Aug	104	15,986	7,717	47,432	32,016	80	3	240
33	9-Aug	26	9,009	5,127	22,513	15,215	63	3	189
34	16-Aug	12	5,466	3,103	9,991	6,282	34	3	102
35	23-Aug	2	2,626	3,378	6,846	8,943	38	2	76
36	30-Aug	2	1,064	4,556	2,538	6,242	35	2	70
37	6-Sep	15	784	11,554	889	7,992	61	3	183
38	13-Sep	8	161	14,448	222	7,617	70	3	210
39	20-Sep	3	9	3,248	10	1,331	33	3	99
40	27-Sep	3	1	558	0	113	8	2	16
Total		2,723	121,921	112,561	224,816	232,390	130	47	2,401
2005-2014 Average		2,105	84,881	143,698	289,481	171,604	153	49	2,748
2015 as % of Average		129%	144%	78%	78%	135%	85%	96%	87%

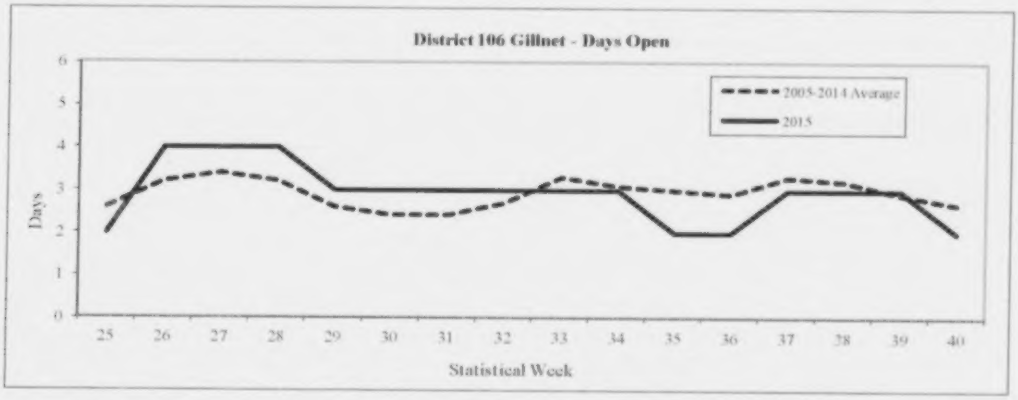

Figure 17. – Days open by week in the District 106 drift gillnet fishery, 2015.

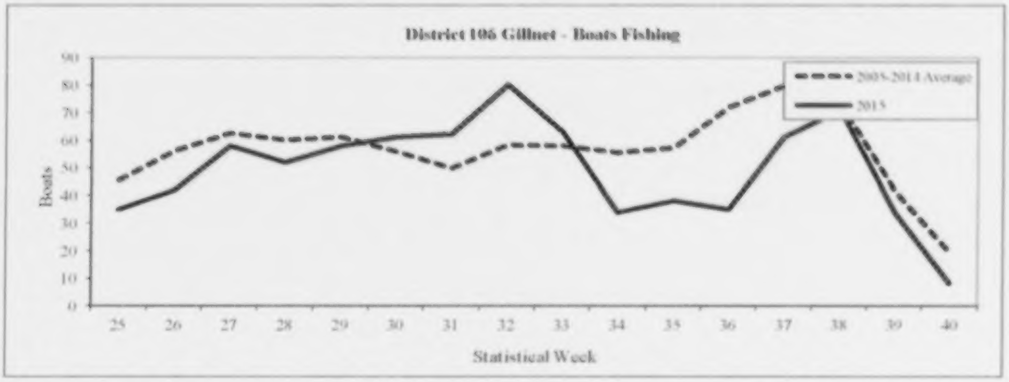

Figure 18. – Number of boats fishing by week in the District 106 drift gillnet fishery, 2015.

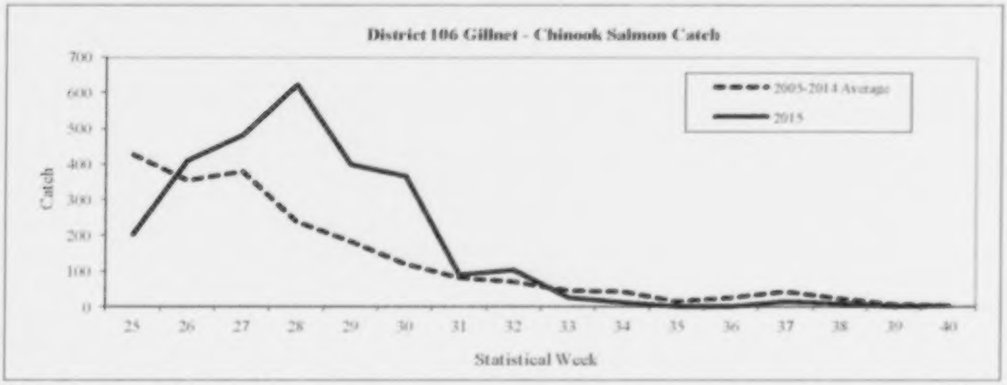

Figure 19. – Chinook salmon harvest by week in the District 106 drift gillnet fishery, 2015.

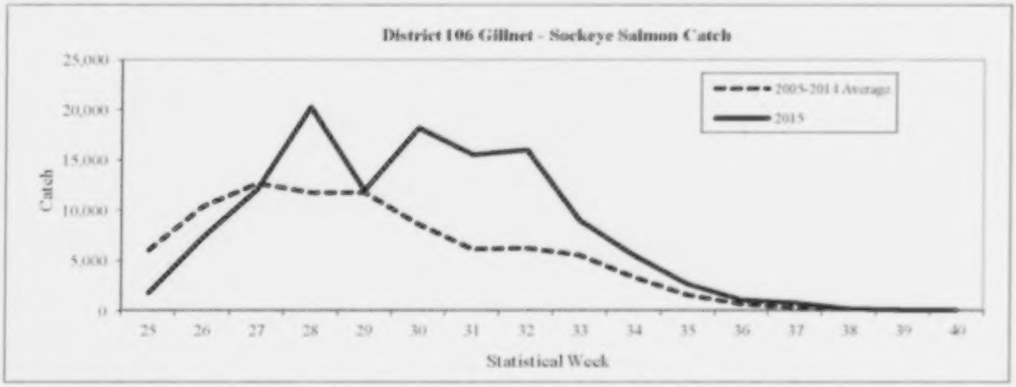

Figure 20. – Sockeye salmon harvest by week in the District 106 drift gillnet fishery, 2015.

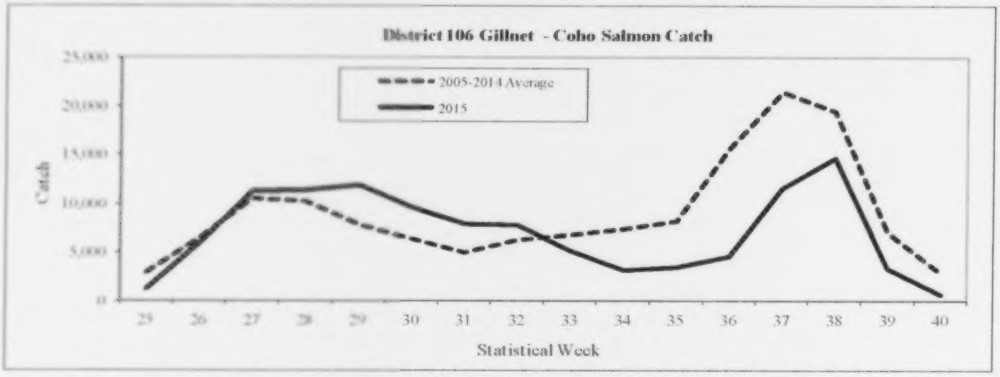

Figure 21. – Coho salmon harvest by week in the District 106 drift gillnet fishery, 2015.

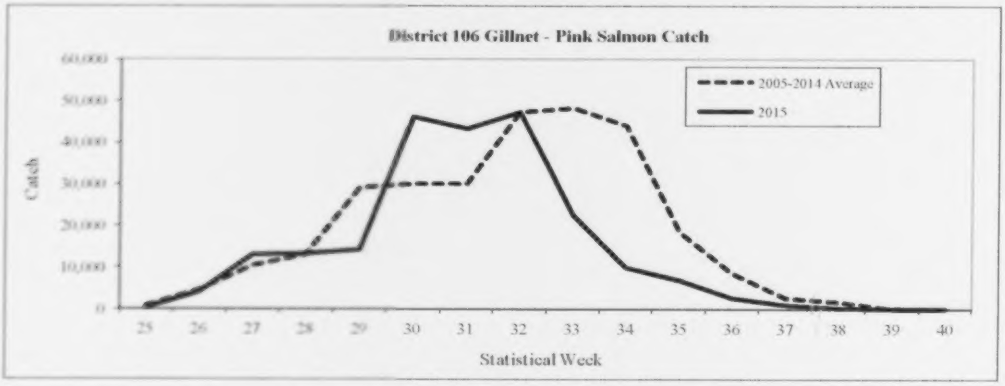

Figure 22. – Pink salmon harvest by week in the District 106 drift gillnet fishery, 2015.

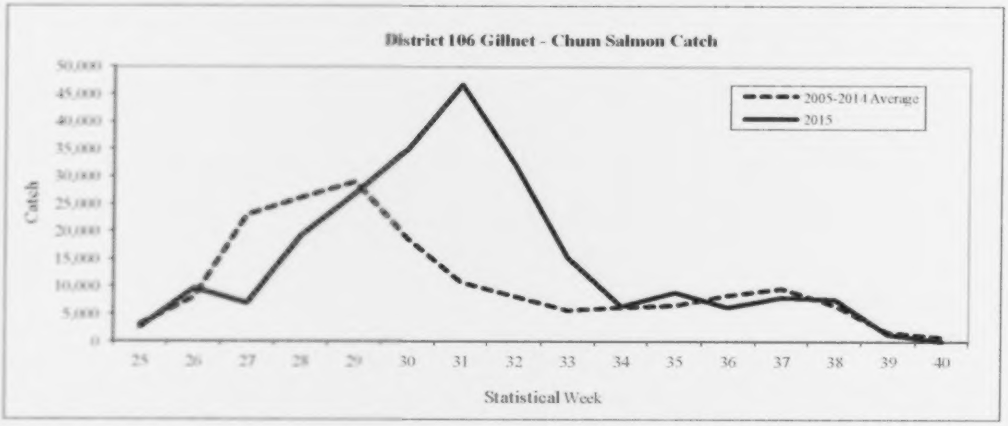

Figure 23. – Chum salmon harvest by week in the District 106 drift gillnet fishery, 2015.

Table 7. – Weekly salmon harvest and effort in the Alaskan District 108 traditional commercial drift gillnet fishery, 2015[a].

Week	Start Date	Chinook	Sockeye	Coho	Pink	Chum	Boats	Days	Boat Days
25	15-Jun	2,014	133	1	1	155	45	2	90
26	21-Jun	3,824	1293	43	48	903	43	4	172
27	28-Jun	2,983	2,796	257	566	2,141	34	4	136
28	5-Jul	2,498	4,149	635	2,336	9,755	37	4	148
29	12-Jul	1,341	4,156	1,264	3,360	14,410	47	4	134
30	19-Jul	719	3,829	1,076	8,505	43,841	70	4	211
31	26-Jul	273	1,976	1,376	8,978	45,196	76	4	232
32	2-Aug	111	1,477	1,100	5,753	26,435	54	3	162
33	9-Aug	42	1,173	1,625	3,337	13,529	58	3	174
34	16-Aug	24	705	1,491	1,150	6,060	39	3	117
35	23-Aug	4	782	1,897	1,677	1,334	28	2	56
36	30-Aug	2	228	1,359	93	606	23	2	46
37	6-Sep	4	157	6,099	115	752	42	3	126
38	13-Sep	1	34	6,859	6	513	28	3	87
39	20-Sep	1	8	4,359	1	360	27	3	81
40	27-Sep	4	0	712	0	19	9	2	20
Total		13,845	22,896	30,153	35,926	166,009	124	50	1,992
2005-2014 Average		12,644	45,033	31,929	53,805	156,611	145	55	2,499
2015 as % of Average		109%	51%	94%	67%	106%	86%	91%	80%

[a] The 2015 District 108 drift gillnet harvest and effort, as well as the 2005–2014 averages, are for the traditional fishery only (directed sockeye salmon portion) fishery. There was no directed Chinook salmon fishery in 2015.

[b] Total boats equals the number of individual permits fished for the year.

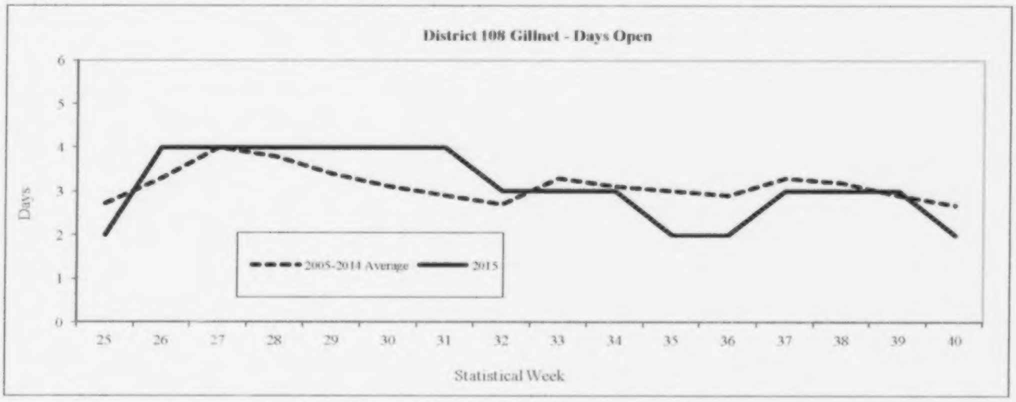

Figure 24. – Days open by week in the District 108 drift gillnet fishery, 2015.

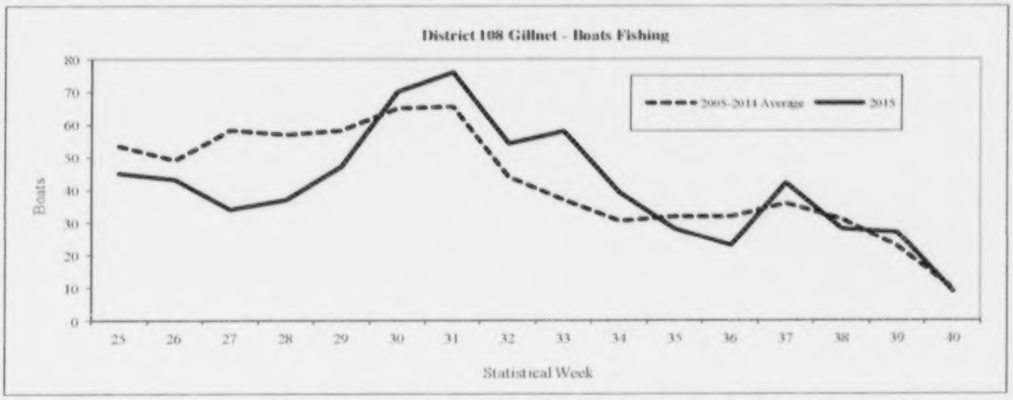

Figure 25. – Number of boats fishing by week in the District 108 drift gillnet fishery, 2015.

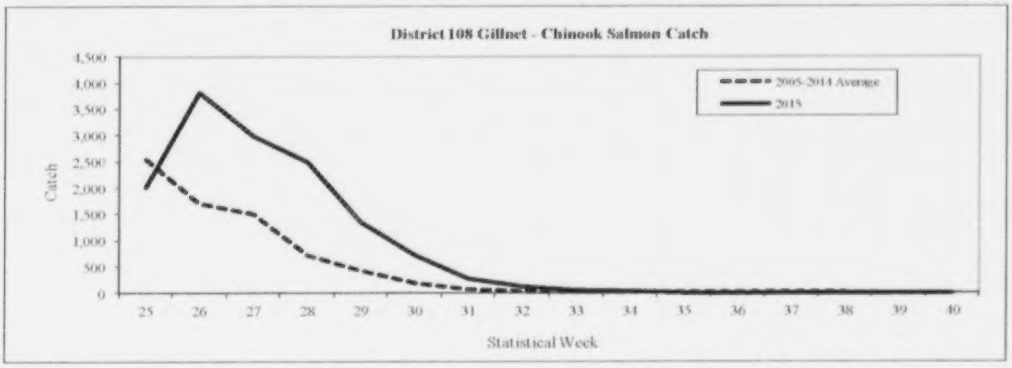

Figure 26. – Chinook salmon harvest by week in the District 108 drift gillnet fishery, 2015.

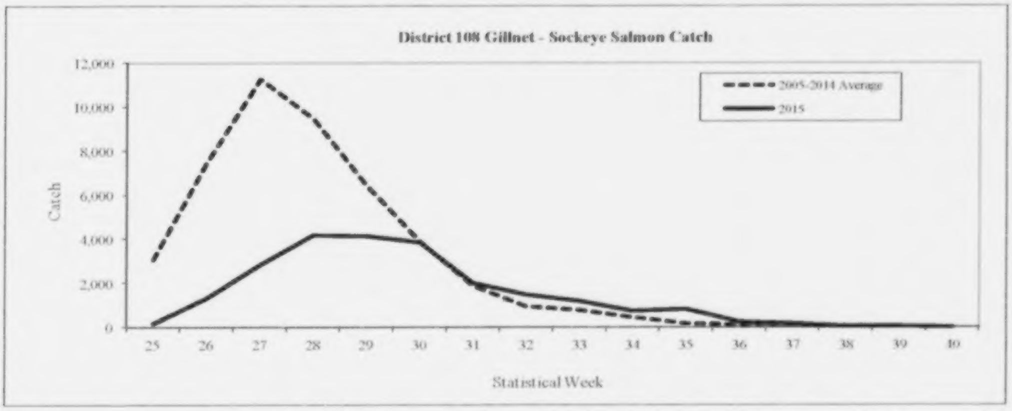

Figure 27. – Sockeye salmon harvest by week in the District 108 drift gillnet fishery, 2015.

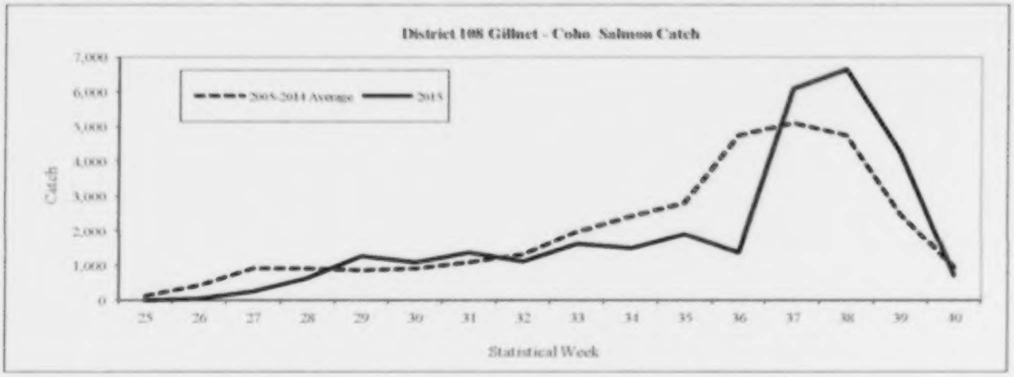

Figure 28. – Coho salmon harvest by week in the District 108 drift gillnet fishery, 2015.

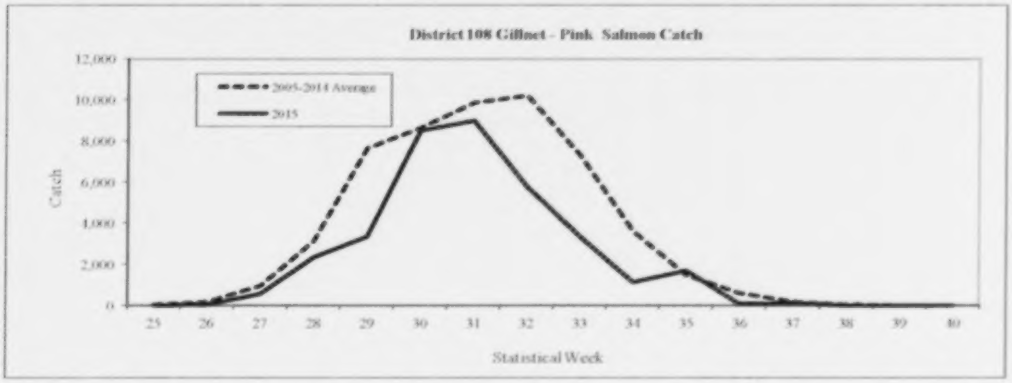

Figure 29. – Pink salmon harvest by week in the District 108 drift gillnet fishery, 2015.

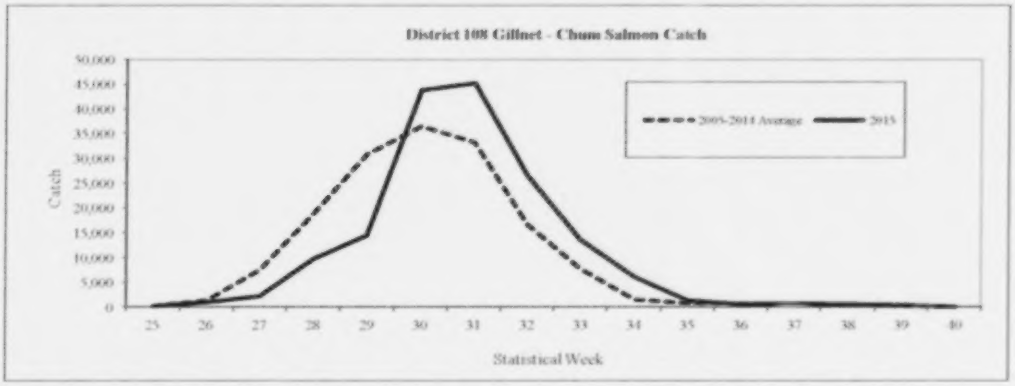

Figure 30. – Chum salmon harvest by week in the District 108 drift gillnet fishery, 2015.

Taku River Area Fisheries

The traditional drift gillnet fishery in District 111 targets salmon stocks bound for the trans-boundary Taku River. This fishery is managed for Chinook salmon from week 18 to week 25 when there are sufficient fish surplus to escapement to provide for a fishery. From week 26 to week 33 the fishery is managed for Taku River sockeye salmon, and from week 34 to week 42 for Taku River coho salmon. Also harvested in this fishery are salmon bound for Stephens Passage and Port Snettisham streams as well as enhanced Chinook, sockeye, coho and chum salmon from Douglas Island Pink and Chum, Inc. (DIPAC) hatchery releases. The traditional fishery does not include harvests from the Speel Arm Special Harvest Area (SHA) inside Port Snettisham.

The escapement goal range for Taku River large Chinook salmon is 19,000 to 36,000 fish with a point goal of 25,500 fish. In years of high abundance, directed Chinook salmon fisheries can be implemented to harvest runs in excess of escapement needs. The 2015 preseason terminal run forecast for the Taku River of 26,100 large Chinook salmon did not allow for any directed Chinook salmon fisheries in District 111.

The escapement goal range for Taku River sockeye salmon is 71,000 to 80,000 fish, with a point goal of 75,000 fish. The 2015 Taku River sockeye salmon forecast was for an above average 216,000 fish, based on the average of Canadian stock-recruit and sibling forecasts. DIPAC forecast 214,000 enhanced sockeye salmon returning through District 111 waters to Port Snettisham.

An escapement goal range of 50,000 to 90,000 Taku River coho salmon with a point goal of 70,000 fish was adopted in early 2015. The U.S. management intent in 2015 was to pass a minimum of 75,000 coho salmon above the border, providing for escapement and a 5,000 fish Canadian assessment fishery. The preseason forecast was for an average inriver run of 99,000 coho salmon in the Taku River, and DIPAC forecast a return of 72,000 enhanced coho salmon from releases in Gastineau Channel. For 2015, DIPAC forecast returns totaling 755,000 enhanced chum salmon to Gastineau Channel and Limestone Inlet, which was below the recent average.

The traditional drift gillnet fishery in District 111 began on Sunday, June 21, 2015 (week 26). The initial drift gillnet opening of the season in District 111 was for three days, due to improved Taku River Chinook salmon abundance and an above average sockeye salmon forecast. Effort for the opening was 72 boats, which was above the ten-year average of 49 boats. The sockeye salmon harvest was well below the recent ten-year average, but the chum salmon harvest of 80,765 fish was nearly four times the recent ten-year average and was the largest chum salmon harvest ever for the week (Table 8; Figures 34 and 37). A total of 541 Chinook salmon were harvested, which was above average for the week (Figure 33).

From early July through mid-August (weeks 27–33) effort in the District 111 drift gillnet fishery was generally below average, with a peak of 93 boats fishing in week 29 (Figure 32). Harvests of sockeye salmon were below average through late July, but improved to near average by early August (Figure 34). Following the record harvest in week 26, weekly chum salmon catches were slightly below average and approximately 472,000 fish were harvested from late June to early August (Figure 37). Most of the summer-run chum salmon harvest in District 111 consists of DIPAC hatchery fish returning to release sites in Gastineau Channel and Limestone Inlet. Chinook salmon harvests were below average through the tail end of the run and few fish were caught after mid-July (Figure 33). Pink salmon harvests were well above average through early August (Figure 36).

For the remainder of August and September (weeks 34–40), overall effort in the fishery was below average in most weeks. In August, the fishery was open for four days of fishing most weeks, but the number of days open dropped to only one or two days during the final three weeks of the season due to Taku River coho salmon returning below forecast levels (Figure 31). The number of boats fishing was below average from mid-August through mid-September (Figure 32). Harvests of coho salmon were below average from mid-August to mid-September (Figure 35). Pink salmon harvests declined in mid-August and were below average for the remainder of the season. Chum salmon harvests dropped quickly in August and catches were well below the recent ten-year average in the remaining weeks of the fishery (Figure 37).

A number of Chinook salmon stocks are known to contribute to the Juneau area sport fishery, including those from the Taku, Chilkat, and King Salmon rivers, and local hatchery stocks, but the major contributor of mature wild fish is believed to be the Taku River. Preliminary estimates indicate that approximately 463 of the Chinook salmon harvested in the Juneau sport fishery from weeks 16 through 28 were of Taku River origin (based on genetic stock identification analysis). The preliminary District 111 harvest of Taku River large Chinook salmon during the accounting period was 292 fish in the drift gillnet fishery, 463 in the sport fishery, and an estimated 30 in the personal use fishery, for a total of 785. Harvests of Taku River large Chinook salmon in these fisheries from week 29 onwards were minimal and resulted in a total catch well below the U.S. base level catch of 3,500 fish. The preliminary escapement estimate of Taku River large Chinook salmon is 28,850 fish, which was within the escapement goal range.

The 2015 traditional District 111 sockeye salmon harvest of 55,096 fish was 53% of the recent ten-year average. Peak catches of sockeye salmon occurred in weeks 31 and 32 (late July and early August; Figure 34). The Speel Arm SHA was opened for four or five days weekly from mid-August to early September to harvest enhanced DIPAC sockeye salmon returning to the Snettisham Hatchery. The lower bound of the Speel Lake sustainable escapement goal range of 4,000 to 9,000 fish was reached on August 28 and the final weir count was 4,888 sockeye salmon. The peak harvest in the Speel Arm SHA occurred in week 34, when 35 boats harvested 15,712 sockeye salmon and smaller numbers of other species of salmon. A total of 28,335 sockeye salmon were caught in the SHA in 2015. The preliminary escapement estimate of Taku River sockeye salmon is 132,523 fish, which was above the escapement goal range.

The 2015 traditional District 111 coho salmon harvest of 23,169 fish was only 59% of the recent ten-year average (Figure 35). Approximately 91% of the coho salmon were harvested in Taku Inlet, above the ten-year average of 83%, and 9% were harvested from Stephens Passage and Port Snettisham. Coho salmon stocks harvested in District 111 include runs to the Taku River, Port Snettisham, Stephens Passage, and local Juneau area streams as well as Alaskan hatcheries. This was the first year of full production for DIPAC's revitalized enhanced coho salmon program. DIPAC enhanced coho salmon first appeared in the District 111 harvest in week 35 and in weeks 39 and 40 comprised 76% and 73% of the harvest respectively. DIPAC enhanced coho salmon contributed 21% of the 2015 District 111 drift gillnet harvest. The preliminary escapement estimate of Taku River coho salmon is 60,200 fish, which was within the escapement goal range.

The 2015 District 111 traditional pink salmon harvest of 288,625 fish was double the ten-year average (Figure 36). The 2015 pink salmon escapement to the Taku River was unknown; however, the number of pink salmon passing through the fish wheels at Canyon Island is used as an index of escapement. The 2015 Canyon Island pink salmon fish wheel catch of 24,246 fish was twice the 1995-2013 odd-year average.

The 2015 District 111 traditional fishery chum salmon harvest of 475,181 fish was 86% of the recent ten-year average, and was comprised almost entirely of summer run fish (Figure 37). The summer chum salmon run continues through mid-August (week 33) and is comprised mostly of domestic hatchery fish and small numbers of wild stocks. Chum salmon returning to DIPAC release sites in Gastineau Channel and Limestone Inlet contributed a major portion of the harvest, but quantitative contribution estimates are not available. Approximately 80% of the District 111 chum harvest was taken in Taku Inlet, and 20% in Stephens Passage. The harvest of 553 fall-run chum salmon (i.e. chum salmon caught after week 33) was only 12% of the recent ten-year average. Most of these fall-run chum salmon are probably of wild Taku and Whiting River origin. Chum salmon escapement numbers to the Taku River are unknown; however, the numbers of fall chum passing through the fish wheels at Canyon Island is used as an index of escapement. The Canyon Island fish wheel project ceased operations on October 3, 2015, and the index of 95 chum salmon was well below average for recent years where the fish wheels were operational into early October.

Table 8. – Weekly salmon harvest in the Alaskan District 111 traditional commercial drift gillnet fishery, 2015[a].

Week	Start Date	Chinook	Sockeye	Coho	Pink	Chum	Boats	Days	Boat Days
26	21-Jun	541	2,022	166	4,416	80,765	72	3	216
27	28-Jun	217	2,161	142	15,350	49,566	73	2	146
28	5-Jul	127	3,418	166	29,490	110,354	61	2	122
29	12-Jul	81	1,699	1,187	27,050	93,148	93	2	186
30	19-Jul	44	8,776	2,123	90,735	94,298	91	3	273
31	26-Jul	20	14,396	1,420	58,661	33,165	67	5	335
32	2-Aug	25	11,663	2,519	34,428	10,818	51	4	204
33	9-Aug	5	5,535	891	25,431	2,514	49	4	196
34	17-Aug	11	3,346	455	2,327	100	16	4	64
35	23-Aug	3	1,151	1,394	577	137	18	5	90
36	30-Aug	1	820	4,165	139	196	29	4	116
37	6-Sep	7	104	4,217	12	70	34	3	102
38	13-Sep	0	4	1,511	0	28	21	2	42
39	20-Sep	1	1	2,462	9	22	17	2	34
40	27-Sep	0	0	351	0	0	6	1	6
Total		1,083	55,096	23,169	288,625	475,181	149	46	2,131
2005–2014 Average		1,782	104,858	39,486	142,954	549,606	184	55	2,986
2015 as % of Average		61%	53%	59%	202%	86%	81%	84%	71%

[a] The 2015 District 111 drift gillnet harvest and effort, as well as the 2005-2014 averages, are for the directed sockeye and coho salmon portions of the fishery only. There was no directed fishery for Chinook salmon in District 111 in 2015 due to a low Taku River preseason abundance forecast.

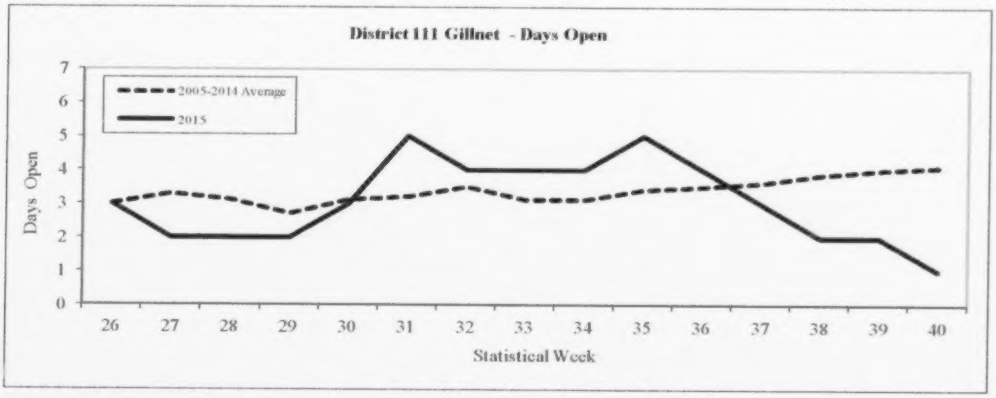

Figure 31. – Days open by week in the District 111 drift gillnet fishery, 2015.

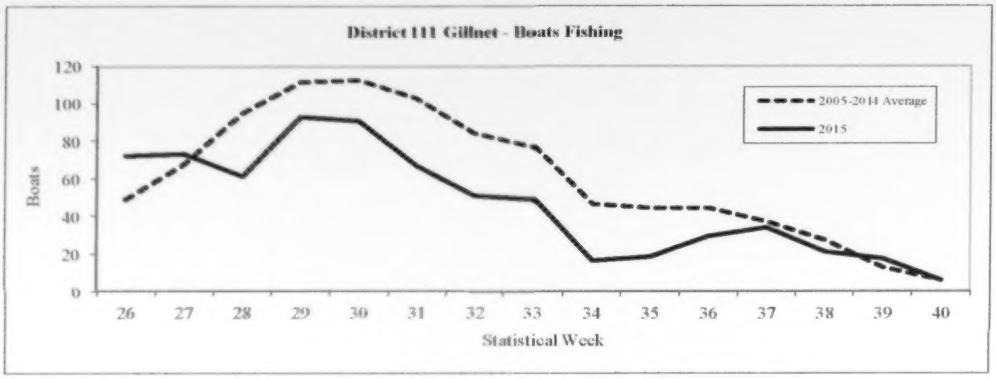

Figure 32. – Number of boats fishing by week in the District 111 drift gillnet fishery, 2015.

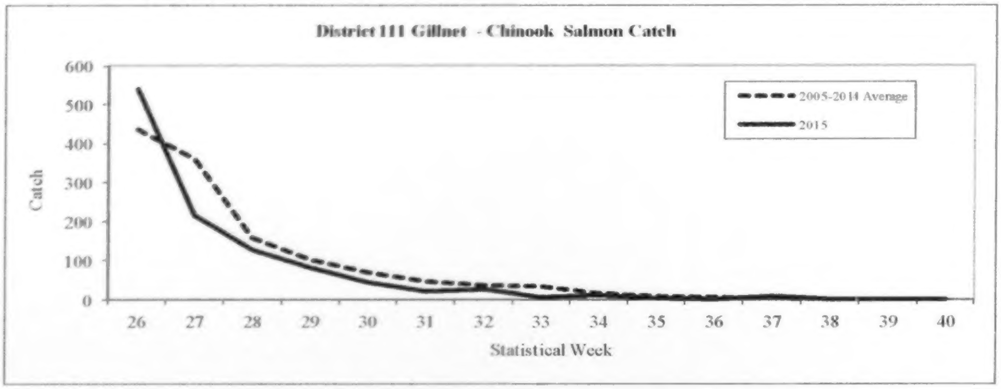

Figure 33. – Chinook salmon harvest by week in the District 111 drift gillnet fishery, 2015.

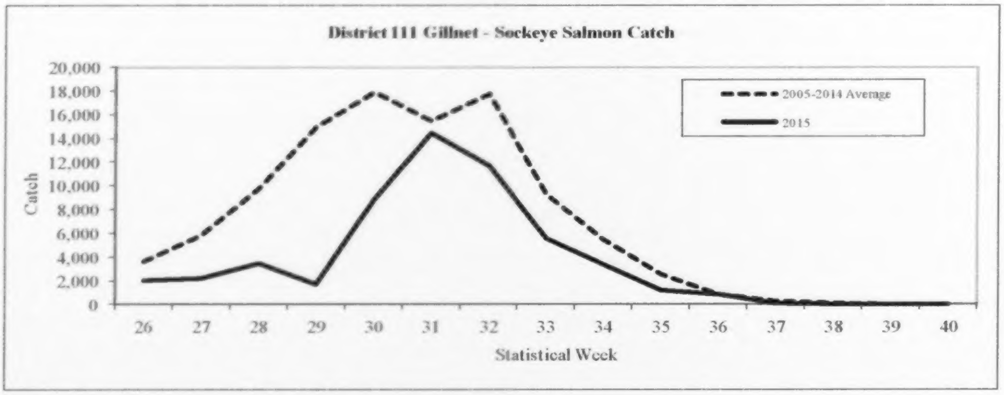

Figure 34. – Sockeye salmon harvest by week in the District 111 drift gillnet fishery, 2015.

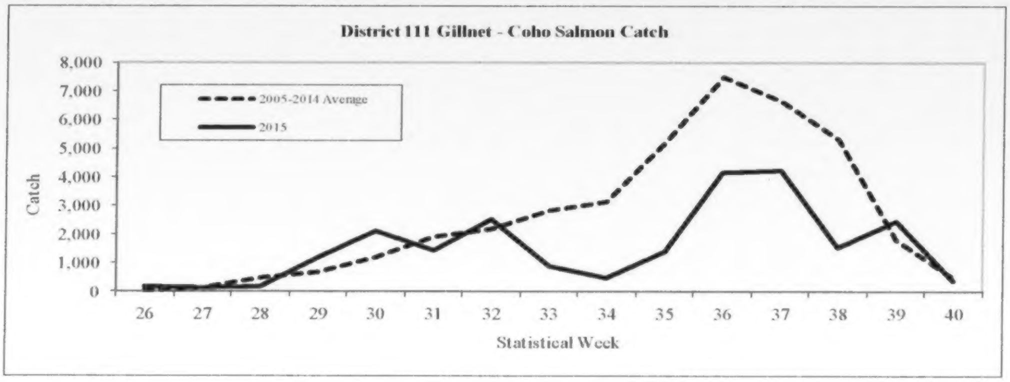

Figure 35. – Coho salmon harvest by week in the District 111 drift gillnet fishery, 2015.

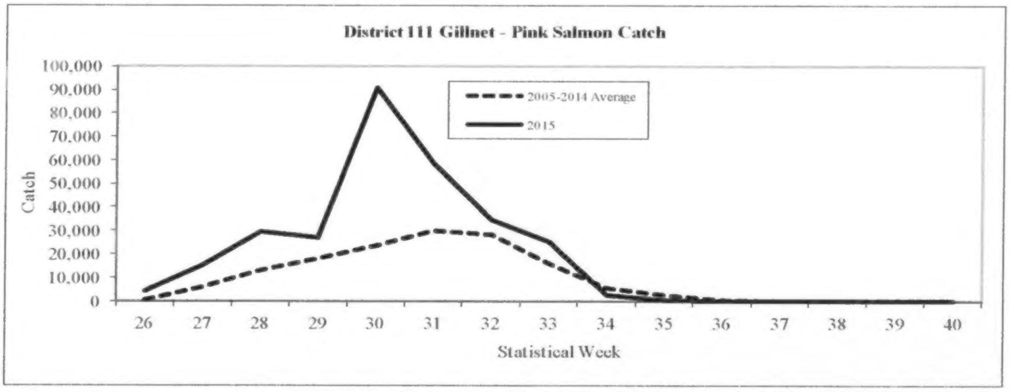

Figure 36. – Pink salmon harvest by week in the District 111 drift gillnet fishery, 2015.

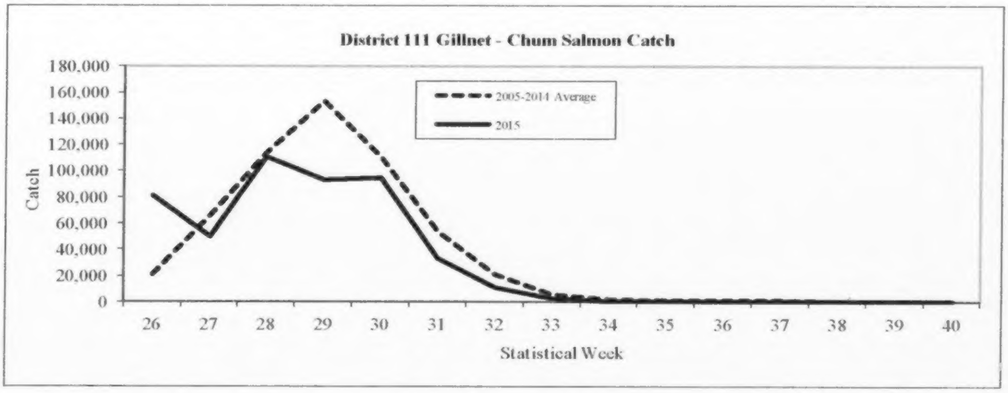

Figure 37. – Chum salmon harvest by week in the District 111 drift gillnet fishery, 2015.

Transboundary River Joint Enhancement

The transport of sockeye salmon fry from the Snettisham Hatchery facility back to the Canadian lakes was complete on May 30, 2015. Approximately 3.8 million fry were released in Tahltan, King Salmon, and Tatsamenie lakes in Canada. The overall green egg to fry survival of 70% for brood year (BY) 2014 releases (Table 9) was above the previous five-year average survival of 58.3% (BY09-BY13) for Tatsamenie and

Tahltan fry. Fry from one Tatsamenie stock incubator tested positive this year for IHNV, accounting for a loss of approximately 170,000 fry prior to transport/back-planting. After transporting BY14 fry back to their respective lakes, all TBR modules, incubators, and short-term fry rearing containers were broken down, cleaned, and disinfected prior to setting up to receive green eggs from BY15 egg-takes.

Brood year 2015 egg-takes were initiated on September 4 at Tahltan Lake and September 14 at Tatsamenie Lake. An estimated total of 5.74 million green eggs were collected from the two donor lakes. Tahltan Lake egg-takes were completed on September 27, and an estimated 4.84 million eggs in 12 egg lots were taken. Tatsamenie Lake egg-takes were completed on October 6 and 0.897 million eggs were collected in 4 lots. Escapement at King Salmon Lake was insufficient to allow for egg collection in 2015. Adult sockeye salmon tissues were collected on the spawning grounds by contractors for DFO and shipped to the ADF&G Juneau Fish Pathology laboratory via Snettisham Hatchery as per treaty agreement.

Table 9. – Summary of numbers and survival rates of brood year 2014 sockeye salmon fry released May 2015. Fish were raised at Snettisham Hatchery as part of the Transboundary River Salmon Enhancement Project.

Brood stock	Release site	Number of trips	Survival rate to eyed stage	Survival rate to release	Number released
Tahltan	Tahltan Lk	7	75.5%	68.9%	2,683,900
Tatsamenie	Upper Tats Lk	2	85.9%	67.7%	730,500
Tatsamenie	Upper Tats Lk, Extended Rearing	2	92.0%	89.6%	187,000
King Salmon L.	King Salmon L.	1	89.3%	83.0%	169,400
	Average/Totals	12	78.8%	70.0%	3,770,800

During the 2015 season, the ADF&G Thermal Mark Lab processed 18,468 sockeye salmon otoliths collected by ADF&G and DFO staff as part of the U.S./Canada fry-planting evaluation program. These collections came from commercial and test fisheries in both U.S. and Canadian waters on the Taku and Stikine Rivers over a 14-week period. The laboratory provided estimates on hatchery contributions for 86 distinct sample collections. Estimates of the percentage of hatchery fish contributed to commercial fishery catches were provided to ADF&G and DFO fishery managers 24 to 48 hours after samples arrived at the lab.

Alsek River Area Fisheries

Although harvest sharing arrangements of Alsek salmon stocks between Canada and the U.S. have not been specified, Annex IV of the Pacific Salmon Treaty calls for the development and implementation of cooperative abundance-based management plans and programs for Alsek River Chinook and sockeye salmon. Escapement goals are in place for Chinook and sockeye salmon stocks spawning at the Klukshu River, a tributary that flows into the Tatshenshini River, approximately 80 km northeast of its junction with the Alsek River. The principal escapement-monitoring tool for Chinook, sockeye, and coho salmon stocks on the Alsek River is the Klukshu River weir, operated by Fisheries and Oceans Canada in cooperation with the Champagne-Aishihik First Nation since 1976. In 2013, Canadian and U.S. biologists adopted a new biological escapement goal range of 7,500 to 11,000 sockeye salmon through the Klukshu River weir. The current biological escapement goal range for Klukshu River Chinook salmon, adopted in February 2013, is a range of 800 to 1,200 fish.

The Department of Fish and Game manages the Alsek River commercial set gillnet fishery to achieve the agreed upon escapement goal ranges. Time and area openings are adjusted by monitoring fishery performance data and comparing it to historical CPUE. The duration of weekly fishing periods is based on fishery performance data (CPUE) and Klukshu River weir data. Historically, gillnets have often been restricted to a maximum mesh size of 6 inches through July 1 to minimize Chinook salmon harvest. The mesh restriction was lifted in 2013 and 2014, but was reintroduced in 2015.

Preseason expectations were for average to above average sockeye salmon and below average Chinook salmon runs in 2015. The overall Alsek drainage sockeye salmon run was expected to be approximately 84,000 fish, which would have been above the recent ten-year average of 63,000 fish. The outlook for 2015 was based on a predicted run of 19,400 Klukshu River sockeye salmon, derived from the latest Klukshu River stock-recruitment data, a Klukshu River contribution rate of 23% to the total run (based on mark-recapture results; 2000-04), and run size estimates using GSI (2005-06, 2011). Principal contributing brood years for the 2015 return were 2010 and 2011. The Klukshu River escapement in 2010 was approximately 19,000 sockeye salmon; well above the ten-year average of 11,000 fish. The sockeye salmon escapement in 2011 was 21,389, which was also well above average. Based on the primary brood year escapements, the outlook for Klukshu River Chinook salmon in 2015 was for a return of 2,000 fish; slightly above the ten-year average of 1,100 fish.

The 2015 Alsek River set gillnet fishery opened Sunday June 7 (week 24). The fishery was extended by one or two days in several weeks of the fishery through early August due to high catch rates of sockeye salmon. The number of days the fishery was open was below average, but the number of boats fishing during weekly openings was near the recent ten-year average throughout the season—the overall effort in boat-days was just below average (Table 10). The total number of individual boats fishing during the season was 19, which was near the 2005–2014 average of 18 boats. Harvests of Chinook salmon through late June were below the recent ten-year average (Table 10). Harvests of sockeye salmon were above average in many weeks of the fishery and the total harvest of 16,104 fish was just above the 2005–2014 average of 14,917 fish (Table 10). There was little effort after early August. In the past several years there has been reduced fishing effort during coho salmon season due to economic struggles and lack of pilots to transport fish to town. In 2015, only 11 coho salmon were harvested (Table 10). The U.S. commercial fishery in the Alsek River closed for the season on October 28 and the river was not fished the last five weeks of the season.

The Klukshu River weir count of 11,211 sockeye salmon was slightly above the upper bound of the 7,500 to 11,000 fish escapement goal range. The count of 2,604 early run sockeye salmon (count through August 15) and the late run count of 9,011 were both slightly above average. The 1,432 Chinook salmon counted through the Klukshu River weir exceeded the established goal range of 800 to 1,200 Chinook salmon.

Table 10. – Weekly fishing effort and salmon harvest for Alsek River, 2015.

Statistical Week	Start Date	Catch					Effort		
		Chinook	Sockeye	Coho	Pink	Chum	Boats	Days	Boat Days
24	7-Jun	75	381	0	0	0	15	1	15
25	14-Jun	69	820	0	0	0	13	1	13
26	21-Jun	71	2,428	0	0	0	13	2	26
27	28-Jun	15	1,723	0	0	0	12	1	12
28	5-Jul	11	5,147	0	0	0	12	3	36
29	12-Jul	1	745	0	0	0	10	1	10
30	19-Jul	0	693	0	0	0	10	1	10
31	26-Jul	1	2,123	0	0	0	11	3	33
32-39[a]	2-Aug	0	2,044	11	0	0	11	9	23
40–44	25-Oct	Opened Continuously—No Effort							
Total		243	16,104	11	0	0	19	22	178
2005-2014 Avg.		482	14,917	1,221	0	6	18	32	189
2015 as % of Avg.		50%	108%	1%		0%	106%	69%	94%

[a] Weeks with fewer than three permits, confidential information so data combined in catch table.

Southeast Alaska Chinook Salmon Fishery

All Gear Harvest

The 2015 SEAK Chinook salmon management programs were configured around an assumed draft abundance index (AI) of 1.45 for the 2015 fishing season, (Table 1).

This was the seventh year that the Annex IV, Chapter 3 provisions of the 2009 PST agreement were implemented. Therefore, the harvest limit for SEAK reflects a 15% reduction in allowable catch (AC) from that allowed under the 1999 PST Agreement. The preliminary total Chinook salmon harvest by all SEAK commercial fisheries was 323,517 fish, and the preliminary sport fish harvest was 81,809, for an all-gear harvest of 405,326 (Table 11). The preliminary all-gear PST harvest was 337,897 fish (Table 12).

Table 11. – Preliminary estimated all-gear Chinook salmon harvests in 2015.

2015 Preliminary Estimated All-Gear Chinook Salmon Harvests								
Gear	Total Harvest	AK Hatchery Harvest	Wild Terminal Exclusion	Alaska Hatchery Addon	Treaty Harvest	Quota	O/U	% O/U
Troll	269,809	22,092	216	18,420	251,172			
Sport	81,809	16,124	0	13,898	67,911			
Drift Gillnet	22,981	17,924	0	16,393	6,589			
Purse Seine	30,265	18,580	0	18,502	11,763			
Set Gillnet	462	0	0	0	462			
Total Net	53,708	36,504	0	34,895	18,813			
Total All Gear	***405,326***	***74,720***	***216***	***67,212***	***337,897***			

Note: Annette Island and terminal area harvests are included.

Table 12. – Chinook all-gear harvests in Southeast Alaska, 1987 to 2015, and deviation from the ceiling for years in which there were ceilings. Harvests are in thousands.

Year	Total Harvest	Add-on and Exclusion Harvest	Target Treaty Harvest	Treaty Harvest	Deviation Number	Deviation Percent
1987	282.4	17.1	263	265.3	2.3	0.9%
1988	279.3	22.5	263	256.8	-7.8	-3.0%
1989	291.0	21.5	263	269.5	6.5	2.5%
1990	366.9	45.9	302	321.0	19.0	6.3%
1991	359.5	61.5	273	298.0	25.0	9.2%
1992	258.8	36.8	227.4	222.0	-5.4	-2.4%
1993	304.1	32.9	263	271.2	8.2	3.1%
1994	264.4	29.2	240	235.2	-4.8	-2.0%
1995	235.7	58.8		176.9		
1996	236.3	81.3		155.0		
1997	343.0	56.3		286.7		
1998	270.6	27.4	260	243.2	-16.8	-6.5%
1999	251.0	52.2	184.2	198.8	14.6	7.9%
2000	263.3	76.8	178.5	186.5	8.0	4.5%
2001	265.7	78.8	250.3	186.9	-63.4	-25.3%
2002	426.5	69.4	371.9	357.1	-14.8	-4.0%
2003	439.4	59.3	439.6	380.2	-59.4	-13.5%
2004	499.3	82.2	418.3	417.0	-1.3	-0.3%
2005	493.1	104.5	387.4	388.6	1.2	0.3%
2006	435.5	75.4	354.5	360.1	5.6	1.6%
2007	404.6	76.4	259.2	328.2	69.0	26.6%
2008	244.2	71.4	152.9	172.8	19.9	13.0%
2009	293.7	65.6	176.0	228.0	52.0	29.6%
2010	284.7	53.9	215.8	230.8	15.0	6.9%
2011	357.0	66.3	283.3	290.7	7.4	2.6%
2012	295.0	52.5	205.1	242.5	37.4	18.3%
2013	257.2	66.1	176.0	191.2	15.2	8.6%
2014	485.4	52.6	439.4	432.8	-6.6	-1.5%
2015[1]	405.3	67.4		337.9		

[1] The actual all-gear harvest limit and deviation cannot be calculated until the CTC completes the postseason calibration.

Troll Fishery

The accounting of treaty Chinook salmon harvested by trollers begins with the winter fishery and ends with the summer fishery. The winter troll fishery is managed for a guideline harvest level (GHL) of 45,000 non-Alaska hatchery-produced Chinook salmon, with a guideline harvest range of 43,000–47,000 non-Alaska hatchery-produced fish, plus the number of Alaska hatchery-produced Chinook salmon harvested during the winter fishery. The 2014–2015 winter troll fishery was open from October 11, 2014 through March 25, 2015 and harvested a total of 50,673 Chinook salmon. Of these, 2,027 (4%) were of Alaska hatchery origin, of which 1,685 counted toward the Alaska hatchery add-on, resulting in a treaty catch of 48,988 (Table 13).

The spring troll fisheries target Alaskan hatchery-produced Chinook salmon and are conducted along migration routes or close to hatchery release sites. Terminal area fisheries, which begin during the spring, occur directly in front of hatcheries or at remote release sites. While there is no ceiling on the number of Chinook salmon harvested in the spring fisheries, the take of PST Chinook salmon is limited according to the percentage of the Alaskan hatchery fish taken in the fishery. Non-Alaska hatchery fish are counted towards the annual PST quota of Chinook salmon, while most of the Alaska hatchery fish are not.

In 2015, spring troll fisheries were conducted from April 16–June 30 in a total of 33 spring areas and six terminal area fisheries. A total of 54,471 Chinook salmon were harvested in spring and terminal troll areas combined, of which 15,756 (29%) were of Alaska hatchery origin and 13,151 counted toward the Alaska hatchery add-on. There were an additional 216 wild exclusion fish, resulting in a PST harvest of 41,104 fish (Table 13).

The 2015 summer troll fishery included one Chinook salmon retention period, from July 1–8. A total of 164,665 Chinook salmon were harvested, of which 4,310 (3%) were of Alaskan hatchery origin and 3,584 counted toward the Alaska hatchery add-on. The resulting PST catch was 161,080 fish. The total harvest for all troll fisheries in the 2015 accounting year was 269,809 Chinook salmon, of which 251,172 counted as PST harvest.

Table 13. – Preliminary 2015 troll fishery Chinook salmon harvest by season.

Gear/Fishery	Total Harvest	Alaska Hatchery Harvest	Alaska Hatchery Add-on	Terminal Exclusion Harvest	Total Term. Exclusion/ Alaska Hatchery Add-on	Treaty Harvest
Winter Troll	50,673	2,027	1,685	0	1,685	48,988
Spring Troll[a]	54,471	15,756	13,151	216	13,367	41,104
Summer Troll						
First Period	164,665	4,310	3,584	0	3,584	161,080
Second Period	0	0	0	0	0	0
Total Summer[b]	164,640	4,310	3,628	0	3,628	161,011
Total Traditional Troll	269,784	22,092	18,420	216	18,637	251,147
Annette Is. Troll	25	0	0	0	0	25
Total Troll Harvest	**269,809**	**22,092**	**18,420**	**216**	**18,637**	**251,172**

[a] Spring troll harvest includes all terminal and Wild Terminal Exclusion harvests for year.

[b] Total summer harvest includes confiscated harvest for year.

Net Fisheries

A total of 22,981 Chinook salmon were harvested in the drift gillnet fisheries in 2015, of which 17,924 (78%) were of Alaska hatchery origin and 16,393 counted toward the Alaska hatchery add-on, resulting in a PST harvest of 6,589 fish (Table 11). A total of 30,265 Chinook salmon were harvested in the purse seine fisheries, of which 18,580 (61%) were of Alaska hatchery origin and 18,502 counted toward the Alaska hatchery add-on, resulting in a PST harvest of 11,763 fish. A total of 462 Chinook salmon were harvested in the set gillnet fisheries, none of which were of Alaska hatchery origin, resulting in a PST harvest of 462 fish (Table 11).

With the exception of directed gillnet harvests of Chinook salmon in SEAK terminal area regulatory Districts 108 and 111, as provided in the Transboundary River agreement (Chapter 1), harvests of Chinook salmon in the net fisheries are primarily incidental to the harvest of other species and only constituted a small fraction (<1.0%) of the total net harvest of all species.

Recreational Fisheries

The Southeast Alaska king salmon sport fishery is managed under provisions of the Southeast Alaska King Salmon Management Plan (5 AAC 47.055). This plan prescribes management measures based upon the preseason abundance index determined by the Chinook Technical Committee of the Pacific Salmon Commission. The plan further stipulates that if the preseason abundance estimate for the current year is not available by May 1, the king salmon bag and possession limits and other management measures will be based on the previous year's preseason abundance index. Since the 2015 preseason abundance index was not available by May 1, the regional sport fish king salmon regulations outlined above were based on the 2014 preseason abundance index. The preseason abundance index generated for the SEAK AABM fishery in spring 2014 was 2.57, resulting in a preseason sport allocation of 81,353 treaty Chinook salmon under the harvest management plan adopted by Alaska Board of Fisheries. Based on this preseason AI and the SEAK King Salmon Management Plan, a resident sport fish angler was allowed to use two rods from October through March, and the bag and possession limit was three king salmon 28 inches or greater in length. The nonresident annual harvest limit was six king salmon 28 inches or greater in length; daily bag and possession limits were one king salmon 28 inches or greater in length except during May and June, when the bag and possession limit was two fish 28 inches or greater in length.

On June 26, although a preseason AI had not been bilaterally agreed to by members of the CTC, the PSC Commissioner for Alaska committed to the other Treaty Parties that SEAK Chinook salmon fisheries would be managed for an all-gear harvest based on the 2015 draft AI 1.45. Revised regulations were announced, which reduced the resident bag and possession limit to two king salmon 28 inches or greater in length. The nonresident annual harvest limit was reduced to three king salmon 28 inches or greater in length. The 2015 recreational fishery had an estimated preliminary harvest of 81,809 Chinook salmon, of which 67,911 counted as treaty harvest. The final total and treaty harvest in the sport fishery for 2015 will be available in late fall of 2016.

Southeast Alaska Coho Salmon Fisheries

Attachment B of the June 30, 1999 U.S.-Canada Agreement relating to the Pacific Salmon Treaty specifies provisions for inseason conservation and information sharing for northern boundary coho salmon. In 2015, troll CPUE in Area 6 in the early weeks of the fishery averaged 73.1 coho/day, which was well above the highest boundary area conservation trigger of 22 coho/day. The mid-July projection of regionwide total commercial harvest of 2.45 million was greater than the 1.1 million trigger for an early regionwide troll closure, specified in Alaska Board of Fisheries regulation and the PST conservation agreement.

The 2015 regionwide summer troll coho fishery began by regulation on June 1. There was no mid-season closure in August and the fishery was extended for 10 days past the normal September 20 ending date, with some area restrictions. The 2015 all-gear catch of coho salmon totaled 2.23 million fish, of which 1.94 million (87%) were taken in commercial fisheries (Table 14). The troll catch of 1.24 million fish was 23% below the 10-year average of 1.62 million fish and accounted for 64% of the commercial catch. Power troll wild coho CPUEs were above average during the third and fourth weeks of July and either at or below average for the rest of the season. The overall wild stock abundance (wild troll catch divided by an index of the troll exploitation rate) was estimated at 3.28 million, and was 18% below the 20-year average. The purse seine harvest of 294,300 fish was 2% below the 10-year average while the drift gillnet harvest of 274,900 fish was 27% below the 10-year average. The set gillnet harvest of 129,100 fish in the Yakutat area was 4% above the 10-year average, with 86% of the catch taken in the Situk-Ahrnklin Lagoon and 13% in the Tsiu River system. A very preliminary estimate of the Southeast Alaska sport catch (295,100) is 12% above the 10-year average (262,800 fish).

Wild production accounted for 1.42 million fish (73%) in the commercial catch compared with a recent 10-year average of 1.89 million fish (79% wild). The hatchery percentage of the commercial catch (26.7%) was the 3rd highest on record, behind 28.4% in 2013 and 27.1% in 2014. Of the estimated hatchery contribution of 518,000 fish, over 99% originated from facilities in Southeast Alaska. Escapement counts and estimates were within or above goal in all cases throughout the region. The total escapement of 956 coho salmon to Hugh Smith Lake was within the biological escapement goal (500-1,600 spawners); 2015 was the first year in which the goal was met after being exceeded for seven consecutive years. The estimated total run size of 1,979 adults was the 4th lowest return on record and 53% below the long-term average of 4,220 adults. Escapements to the three long-term northern Southeast indicator stocks (Auke Creek, Berners River, Ford Arm Creek) all exceeded their respective goals. The combined peak count of 10,032 coho salmon in the 14 surveyed streams in the Ketchikan area was above the 1987–2014 average of 8,620 spawners, and well above the goal of 4,250-8,500 spawners.

While smolt estimates were average or above-average in most systems, low adult returns (compared with recent averages) were influenced primarily by low marine survival. While marine survival was well below-average throughout the region, there was also an abrupt reversal of the recent pattern during 2009–2014 in which survival was relatively higher in the southern portion of the region, and a return to the pattern that favored more northern stocks during 1983¬–2006. In 2015, marine survival for northern inside indicator stocks ranged from 9–12%, the marine survival rate for the Hugh Smith stock in southern Southeast was under 6%.

Total exploitation rate estimates were low to moderate for all indicator stocks, ranging from 25% for Auke Creek to 52% at both Ford Arm Creek and Hugh Smith Lake. The estimated all-gear exploitation rate on the Hugh Smith Lake stock of 52% continued the trend toward moderate all-gear exploitation rates for that system, consistent with a decline from an average of 75% in the 1990s to 53% during 2000–2014. The Alaska troll fishery exploitation rate on the stock (24%) was below the historical average of 33% from 1982–2014 and the peak decade average of 41% in the 1990s. Alaska troll fishery exploitation rates were also well-below the long-term average for Auke Creek (20%), and Ford Arm Creek (45%). The all-fishery exploitation rate on the Ford Arm Creek stock (52%) showed a sharp reduction from a recent period of historically high rates (averaging 74%) during 2011–2014, despite an increase in the Alaska troll exploitation rate from an average of 40% in 2011–2014 to 45% in 2015. The sharp decrease in the all-fishery exploitation rate on the stock resulted from a relatively weak local pink salmon to Khaz Bay, resulting in low fishing effort and a reduced incidental coho salmon harvest in the local purse seine fishery.

Table 14. – Coho salmon harvest in Southeast Alaska in 2015 by gear type (preliminary).

Gear Type	Harvest
Troll	1,241,100
Purse Seine	294,300
Drift Gillnet	274,900
Set Gillnet	129,100
Sport (marine and freshwater)	295,100
Total	2,234,500

Preliminary 2015 Chinook and Coho Salmon Fisheries in Washington and Oregon

Introduction

This report describes the conduct of United States (U.S.) fisheries of interest to the Pacific Salmon Commission (PSC) that occurred during 2015 in the area north of Cape Falcon, Oregon and south of the U.S./Canada border. These fisheries were conducted under pre-season management plans that were consistent with Annex IV of the Pacific Salmon Treaty (PST 2008) including obligations defined within Chapter 3 for Chinook individual stock based management regimes (ISBM) and Chapter 5 for Southern Coho Management.

An overview of the Chinook (Oncorhynchus tshawytscha) and Coho (Oncorhynchus kisutch) salmon conservation challenges facing managers during the 2015 pre-season planning process in this region is provided. The conduct of major fisheries is described, and estimates of landed catch, where available, are compared to pre-season catch limits or expectations for Chinook (Table 1) and Coho (Table 2). For perspective, landed catches for those fisheries since 2010 are also presented. Where available, preliminary estimates of the number of Chinook or Coho salmon released by anglers in 2015 mark-selective fisheries are also presented. All estimates for the 2015 fisheries are preliminary and subject to change. Estimates of spawning escapements and abundance of Coho and Chinook stocks are not available at this time.

Pre-Season Planning

Pre-season planning for southern U.S. fisheries of interest to the PSC is a coordinated activity involving Tribal, State and Federal management entities, with the involvement of conservation and fishing interests. The Pacific Fishery Management Council (PFMC) conducted a series of public meetings to consider options for ocean fishery season structures while the Tribes and States conducted government-to-government and public, open meetings throughout the region to develop and analyze alternative season structures for fisheries in the inside waters of the Columbia River, coastal Washington and Puget Sound. Participants in these various planning sessions evaluated the biological and socio-economic consequences of the alternative season structures for the outside (ocean) and inside (marine and freshwater) fisheries (Figure 38) including the anticipated impacts on U.S. southern origin stocks in fisheries conducted under the PST in Canada and Southeast Alaska. Agreement was reached on season structures expected to achieve conservation goals, domestic fishery objectives and legal obligations, including the PST, assuming fisheries are conducted as planned and pre-season abundance estimates are accurate.

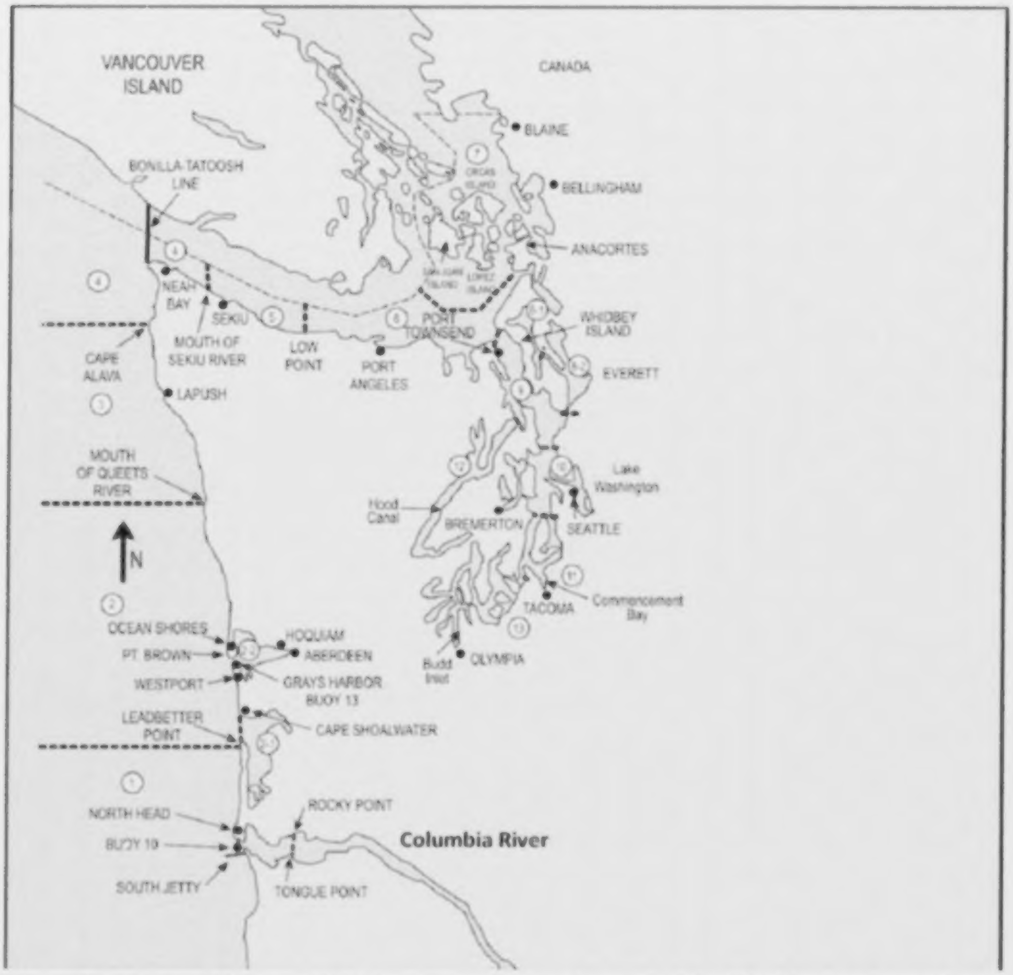
VANCOUVER ISLAND
CANADA
BLAINE
BELLINGHAM
ORCAS ISLAND
ANACORTES
SAN JUAN ISLAND
LOPEZ ISLAND
BONILLA-TATOOSH LINE
NEAH BAY
SEKIU
MOUTH OF SEKIU RIVER
LOW POINT
PORT ANGELES
PORT TOWNSEND
WHIDBEY ISLAND
EVERETT
CAPE ALAVA
LAPUSH
MOUTH OF QUEETS RIVER
Lake Washington
Hood Canal
BREMERTON
SEATTLE
N
Commencement Bay
TACOMA
OLYMPIA
Budd Inlet
OCEAN SHORES
PT. BROWN
WESTPORT
HOQUIAM
ABERDEEN
GRAYS HARBOR BUOY 13
LEADBETTER POINT
CAPE SHOALWATER
NORTH HEAD
BUOY 10
SOUTH JETTY
ROCKY POINT
TONGUE POINT
Columbia River

Figure 38.- Map of Western Washington marine catch areas of the Washington coast (Areas 1 through 4) and Puget Sound (Areas 5 through 13) (WAC 220-22-030). Inside (Columbia River) fisheries reported in this document extend beyond the scope of this map.

Chinook Salmon Management

Under the 2008 Pacific Salmon Treaty Agreement, southern U.S. fisheries are subject to the Individual Stock Based Management provisions of Annex IV, Chapter 3. These provisions require the non-ceiling index for aggregated Southern U.S. fisheries on Chinook stocks not achieving their management objectives to be no greater than 60% of the levels estimated for the 1979 – 1982 base period.

Conservation obligations associated with the U.S. Endangered Species Act (ESA) for threatened and endangered Chinook salmon stocks originating from Puget Sound and the Columbia River have been more constraining to southern U.S. fisheries than PST obligations. Catch quotas for the 2015 U.S. ocean fisheries in the area north of Cape Falcon, Oregon, were defined by the impact limits on ESA-listed lower Columbia River natural tule fall Chinook stocks, ESA-listed Puget Sound Chinook stocks, and the abundance of other healthy, harvestable Chinook salmon stocks contributing to fisheries in this area. Puget Sound fishing seasons were structured to provide fishing opportunity on healthy salmon species or stocks within the impact limits defined for ESA-listed Puget Sound Chinook.

Coho Salmon Management

During the pre-season fishery planning process of 2015, Canadian fishery managers informed the U.S. that the Interior Fraser management unit was again expected to be in the low categorical abundance status, and U.S. fisheries were constrained to ensure that the exploitation rate on this management unit did not exceed 10.0% as defined by the PST Southern Coho Management Plan. All U.S. natural spawning Coho management units specified by the PST Southern Coho Management Plan were forecasted to be in moderate or abundant status except Strait of Juan de Fuca, Quillayute and Queets River natural Coho were at low status.

The impact on natural Coho stocks, seasons and catch limits adopted for southern U.S. fisheries were predicted using the Fisheries Regulation Assessment Model (FRAM; PFMC 2008). The total exploitation rate on the Interior Fraser management unit was predicted to be 10.0% in Southern U.S. fisheries. Seasons and Coho quota levels for U.S. ocean fisheries were constrained primarily by the management objectives of Queets River natural Coho and ESA-listed lower Columbia River natural Coho, while limits to fisheries in marine areas within northern Puget Sound and the Strait of Juan de Fuca were primarily constrained by management objectives for the Interior Fraser Coho management unit.

North of Cape Falcon Ocean Fisheries

Fisheries in this area are managed to meet conservation objectives for ESA¬ listed stocks, natural stocks and brood stock goals for hatchery stocks. Within these stock management objectives, ocean fishing seasons are defined that meet legal requirements of Tribal treaties and allocations between Non-Tribal troll and sport fisheries. Ocean fishery seasons are also constructed to ensure a balance of opportunity for harvest with the inside fisheries. Lower Columbia River hatchery Coho and Columbia River fall Chinook have historically been the major stocks contributing to catches of ocean fisheries in the North of Cape Falcon area.

Chinook and Coho salmon catch quotas were established for the 2015 ocean Tribal, Non-Tribal troll and sport fisheries. Ocean fishery quotas for Chinook salmon were defined by exploitation rate limits on several ESA-listed Puget Sound Chinook stocks as well as the total exploitation rate limit of 41% on ESA-listed lower Columbia River natural tule fall Chinook stocks in all fisheries. Ocean fishery quotas for Coho salmon were defined by the total exploitation rate limit on Queets River natural Coho, ESA-listed lower Columbia River natural Coho, Interior Fraser Coho management units, and agreements that allocated the total allowable impacts between ocean and inside fisheries.

Non-Tribal Troll Fishery

Pre-season quota levels for the non-Tribal troll fisheries were 67,000 Chinook and 19,200 Coho (with a clipped adipose fin, hereinafter referred to as marked). The preliminary estimates of non-Tribal harvest in the 2015 North of Falcon troll fishery are 66,605 retained Chinook (99.4% of the coast-wide quota), and 5,050 retained Coho (26% of the coast-wide quota). Trollers harvested 39,170 Chinook in the May 1 – June 30 Chinook-only fishery and the remaining 27,435 Chinook were harvested in the all-species fishery between July 1 and September 23. The Coho catch represents 3,887 harvested in a mark-selective fishery and 1,163 harvested in a non-selective fishery from September 18-23.

Tribal Troll Fishery

The Tribal troll ocean fishery (also known as the Treaty troll fishery) quotas were defined by conservation concerns for ESA listed Chinook and Coho stocks. For Chinook salmon quotas Lower Columbia River Tule Chinook salmon, Mid-Hood Canal Chinook salmon and South Puget Sound Chinook salmon were the stocks that established the Chinook quota at 60,000. The Coho quota was constrained by the 10% exploitation rate objective for Interior Fraser Coho and Queets River Natural Coho salmon, creating a Coho salmon quota of 42,500. The Tribal troll fishery takes place in ocean areas 2, 3, 4 and 4B. The season was comprised of a May/June Chinook-directed fishery and a July 1 through September 15 all species (Chinook and Coho) fishery. The Chinook quota was split 50:50 between the two fisheries. The Chinook-directed fishery ran through all of May and closed on June 30 going over the 30,000 Chinook sub-quota by 0.03%. The Tribal trollers made 683 landings during this fishery. The all species fishery opened on July 1 with a Chinook sub-quota that was decreased by 916 Chinook salmon for the overage in the first fishery. This decreased the Chinook sub-quota to 29,084 Chinook salmon. The all-species fishery closed on September 15 taking 96% of the Chinook sub-quota and 9% of the Coho quota. The season concluded with a total catch of 58,900 Chinook salmon (98% of the overall quota) and 3,900 Coho salmon (9% of the quota). The Tribes made 1,112 landings during the ocean Tribal troll season.

Sport Fisheries

Pre-season quotas for the sport fishery were 64,000 Chinook (non-mark-selective equivalent of 58,000) and 150,800 marked Coho. The 64,000 Chinook quota included 10,000 in the May-June mark-selective fishery and 54,000 in the non-selective fishery. Preliminary total catch estimates for the ocean sport fisheries north of Cape Falcon were 42,200 retained Chinook (66% of the coast-wide quota) and 83,600 retained Coho (55% of the coast-wide quota). A description of the resulting season structure and catches by management area follows.

U.S./Canada border to Cape Falcon, OR

Sport salmon fishing was open for all species except Coho on May 15-16, May 22-23, and May 30-June 12 from the U.S./Canada border to the Queets River, and from May 31-June 13 between the Queets River and Cape Falcon operating under a coastwide quota of 10,000 marked Chinook. The estimate of landed catch for the coastwide mark-selective sport fishery is 1,200 Chinook (12% of the quota). The Chinook minimum size limit was 24 inches.

Preliminary estimates of Chinook retained and the percentage of legal size Chinook encountered that were retained and released in the Chinook mark-selective sport fishery May 15 – June 12, 2015, for Areas 1-4 combined.

Chinook retained	Retained %	Released
1,200	74%	430

A detailed report of this fishery, including catch, effort and results of sampling and monitoring programs, will be available from the Washington Department of Fish and Wildlife in early 2015.

Columbia Ocean Area (including Oregon)

All-species salmon sport fishing opened in Ocean Area 1 (Columbia Ocean Area) on June 13 with a pre-season quota of 79,400 marked Coho and a guideline of 15,000 Chinook. Beginning September 4, the fishery was non-selective for Coho (remaining sub-area Coho quota – 41,100 fish – was converted at an impact neutral rate to a non-selective Coho quota of 15,300). The fishery closed as scheduled on September 30. The catch estimates for Area 1 are 11,900 Chinook (78% of the guideline), 38,300 Coho during the mark-selective portion of the fishery (48% of the mark-selective quota), and 6,200 Coho during the non-selective portion of the fishery (41% of the non-selective quota). An additional 240 Chinook were landed in the spring mark-selective fishery. The Chinook minimum size limit was 24 inches, with a sub-area closure in the Columbia Control Zone.

Preliminary estimates of Coho encounters (retained and released), and mark rate in the Area 1 Coho mark-selective sport fishery, June 13 – September 3, 2015.

Coho retained	Coho released	Total encounters	Mark %
38,300	22,900	61,200	63%

Westport, Washington

Ocean Area 2 (Westport, WA) opened for all-species salmon sport fishing on June 13 with a pre-season quota of 52,840 marked Coho and a guideline of 27,900 Chinook. Beginning September 4, the fishery was non-selective for Coho (remaining sub-area Coho quota – 30,000 fish – was converted at an impact-neutral rate to a non-selective quota of 13,000). The fishery closed as scheduled on September 30. The catch estimates for Area 2 are 18,400 Chinook (65% of the guideline), 22,800 Coho during the selective portion of the fishery (43% of the mark-selective quota), and 8,000 Coho during the non-selective portion of the fishery (62% of the non-selective quota). An additional 750 Chinook were landed in the spring mark-selective fishery. The Chinook minimum size limit was 24 inches.

Preliminary estimates of Coho encounters (retained and released), and mark rate in the Area 2 Coho mark-selective sport fishery, June 13-September 3, 2015.

Coho retained	Coho released	Total encounters	Mark %
22,800	24,600	47,400	48%

La Push, Washington

Ocean Area 3 (La Push, WA) opened for all-species salmon sport fishing on June 13 with a pre-season quota of 3,710 Coho and a guideline of 2,700 Chinook. The fishery closed on its automatic closure date, September 30, and reopened October 1 through October 11. From September 4-30, the fishery was non-selective for Coho (remaining sub-area Coho quota – 3,200 fish – was converted at an impact neutral rate to a non-selective quota of 625. The catch estimates for Area 3 are 2,400 Chinook (85% of the guideline) and 400 Coho during the mark-selective portion of the fishery (74% of the mark-selective quota), and 200 Coho during the non-selective portion of the fishery (29% of the non-selective quota). An additional 7 Chinook were harvested in the spring mark-selective fishery. The Chinook minimum size limit was 24 inches.

Preliminary estimates of Coho encounters (retained and released), and mark rate in the Area 3 Coho mark-selective sport fishery, June 13 – September 3 and October 1-11, 2015.			
Coho retained	Coho released	Total encounters	Mark %
400	500	900	45%

Neah Bay, Washington

Ocean Area 4 (Neah Bay, WA) opened for all-species salmon sport fishing on June 14 with a pre-season quota of 19,220 marked Coho and a guideline of 7,000 Chinook. The fishery closed on its automatic closure date, September 21. Beginning September 1, the fishery was non-selective for Coho (remaining sub-area Coho quota – 15,100 fish – was converted at an impact-neutral rate to a non-selective quota of 4,600; a transfer of non-selective Coho from the Neah Bay area sport fishery to the La Push area quota resulted in a final non-selective Coho quota of 1,600). The catch estimates for Area 4 are 5,600 Chinook (81% of the guideline) and 4,200 Coho during the mark-selective portion of the fishery (22% of the mark-selective quota), and 1,550 Coho during the non-selective portion of the fishery (97% of the non-selective quota). An additional 300 Chinook were harvested in the spring mark-selective fishery. The Chinook minimum size limit was 24 inches.

Preliminary estimates of Coho encounters (retained and released), and mark rate in the Area 4 Coho mark-selective sport fishery, June 14 – September 21, 2014.			
Coho retained	Coho released	Total encounters	Mark %
4,200	7,400	11,600	36%

North of Cape Falcon Inside Fisheries

Many inside fisheries on the Washington Coast and in Puget Sound were closed to minimize impacts on wild Coho when in-season information indicated that run sizes were substantially lower than anticipated pre-season. In addition, managers were concerned about future impacts on production due to severe drought conditions and the small body size of returning adults.

Washington Coastal River Fisheries

North Washington Coastal Rivers

Net and sport fisheries directed at salmon in this region were implemented based upon pre-season, Tribal-State agreements and subject to in-season adjustments. The 2015 north coastal rivers net harvest (all by Tribal fisheries that are non-selective) includes catch from the Sooes, Quillayute system, Hoh, Queets, and Quinault Rivers. The 2015 commercial Tribal net fisheries in north coastal rivers have harvested an estimated 15,700 Chinook salmon and 16,800 Coho salmon through November 15, 2015. Low returns of Coho to north coast streams led to in-season fishery restrictions and closures in several rivers.

Recreational fisheries conducted in the Quillayute, Hoh and Queets River systems, included mark-selective fisheries for hatchery Chinook salmon. Recreational fisheries for Coho salmon conducted in the Quillayute River system included mark-selective components. Harvest or impact estimates for these fisheries are unavailable at this time.

Grays Harbor, Washington

Harvest for Grays Harbor, WA includes catch from both the Humptulips and Chehalis Rivers through November 15, 2015. The non-selective Tribal net fisheries in Grays Harbor, and including fisheries in the Humptulips and Chehalis Rivers, harvested an estimated 10,500 Chinook salmon and 12,400 Coho salmon. The Quinault Nation closed its Coho fishery when in-season data indicated that wild Coho returns were much smaller than pre-season expectations. The non-Tribal commercial fishery in the northern portion of

Grays Harbor near the Humptulips River (Area 2C) did not open in 2015 due to a lower than expected return of Coho. There were 62 Chinook salmon (mark-selective) and 1,507 Coho harvested in the Non-Tribal commercial gillnet fishery in Areas 2A and 2D. Sport fisheries conducted in the Chehalis and Humptulips Rivers included mark-selective components for Chinook and Coho salmon. Harvest data for these fisheries are not available at this time.

Columbia River Fisheries

Tribal and Non-Tribal net and sport salmon fisheries in 2015 occurred during the winter/spring (January – June 15), summer (June 16 – July) and fall (August – October) periods. All fisheries were constrained by impacts on ESA listed stocks. Winter/spring fisheries were primarily constrained by impacts on ESA listed upper Columbia River spring Chinook, Snake River spring/summer Chinook and wild winter Steelhead. Summer fisheries were constrained by impacts to ESA listed Snake River Sockeye. Fall fisheries were mainly constrained by impacts to ESA listed wild lower Columbia tule fall Chinook and wild lower Columbia River Coho as well as Group B Steelhead which are part of the Snake River Steelhead distinct population segment (DPS). Snake River wild fall Chinook can be a constraint to fall season fisheries, but impacts to other listed stocks generally limit fisheries first.

Columbia River salmon fisheries are developed and regulated to meet conservation standards. Fisheries are managed to operate within the impact limits set for ESA listed stocks, meet the objectives for healthy Columbia River natural stocks, and ensure brood stock needs are met for hatchery salmon. Mainstem Columbia River fisheries are also developed and managed to remain within the requirements of the 2008 – 2017 US v. Oregon Management Agreement which include Tribal/Non-Tribal sharing agreements. All 2015 data is preliminary and subject to change. This section includes harvest from Columbia River fisheries that are considered to be of the interest to PSC; therefore, the data may not match other reports that include total harvest.

Winter-Spring Fisheries

Non-Tribal Net

The mainstem Winter/Spring commercial fishery has operated under mark-selective fishery regulations since 2002. In 2015, the winter/spring salmon season consisted of eight fishing periods (91 hours total) between March 31 and June 11. The fishery occurred downstream of Bonneville Dam, with time, area, and gear restrictions in place. Landings included 6,500 hatchery adult spring Chinook kept (3,700 released non-adipose fin clipped released). Additional fisheries occurred in off-channel areas (Select Areas) in the Columbia River estuary. Wanapum tribal fisheries upstream of Priest Rapids Dam are not reported in this document.

Preliminary adult Spring Chinook kept and released in the 2015 Winter/Spring Commercial non-Tribal tangle-net mark-selective fishery.

System	Area	Chinook Kept	Chinook Released	Total Handle	% Kept
Columbia River	Below BON (LCR)	6,500	3,700	10,200	64%

Sport

Mainstem Columbia River mark-selective sport fisheries began in 2001. The area below Bonneville Dam was open January 1 – April 11, April 16, May 2-3, May 9 and May 16 – June 15 for hatchery Chinook retention. Catch estimates include 19,600 hatchery adult spring Chinook (5,100 non-adipose fin clipped released). The area from Bonneville Dam upstream to the Oregon/Washington border (17 miles upstream of McNary Dam) was open March 16 – May 10 and May 28-June 15. Catch estimates for this area total 1,600 hatchery adult spring Chinook (500 non-adipose fin clipped released). The Snake River fishery structure included four specific catch areas open on a days-per-week rotation. The fishery opened in late April and continued into late May. The areas re-opened in early June and continued through June 30. Catch in the Snake River fishery totaled 1,900 hatchery adult spring Chinook (400 non-adipose fin clipped released). Fisheries also occur in tributaries but are not reported in this document.

Preliminary adult Spring Chinook kept and released in the 2015 Winter/Spring sport mark-selective fishery.

System	Area	Chinook Kept	Chinook Released	Total Handle	% Kept
Columbia River	Below BON (LCR)	19,600	5,100	24,700	79%
Columbia River	BON to WA-OR S/L	1,600	500	2,100	76%
Snake River	Washington Waters	1,900	400	2,300	83%

Tribal

Tribal winter/spring fisheries occur from January 1 through June 15. Tribal mainstem fisheries are not mark-selective. Tribal fisheries are conducted in the mainstem Columbia River from Bonneville Dam upstream to McNary Dam (Zone 6). Platform and hook and line fisheries also occur in accordance with various Memorandum of Understanding (MOUs) in the area immediately below Bonneville Dam, but in 2015, the tribes kept this fishery closed during the spring management period. No spring Chinook were harvested in the commercial winter season set-line Sturgeon fishery (January 1 – 31). Seven Chinook were harvested in the winter gillnet fishery (February 1 – March 21). Ceremonial and subsistence (C&S) fisheries include harvest from platform, hook and line, and gillnet fisheries through Tribal permits. Commercial sales were allowed for platform and hook and line caught fish beginning May 12. Weekly commercial gillnet fisheries also began May 12. Harvest estimates from C&S and commercial fisheries total 31,097 upriver spring Chinook. Fisheries are also conducted in Zone 6 tributaries and in Columbia and Snake River tributaries upstream from McNary Dam. Tributary harvest (including Snake Basin harvest) is not reported in this document

Summer Fisheries

Non-Tribal Net

Summer season commercial fisheries are not mark-selective. Three fishing periods (32 hours total) occurred during June 17 – July 22 in the area below Bonneville Dam. Time, area, and gear restrictions were in place for all summer season commercial fisheries. Landings are estimated at 3,900 upper Columbia summer Chinook.

Sport

Summer season fisheries occurred from June 16-July 31 from the Astoria-Megler Bridge near the mouth of the Columbia River upstream to Priest Rapids Dam. The fishery was mark-selective for upper Columbia summer Chinook except during July 3-31 in the area from the Astoria-Megler Bridge upstream to the Oregon Washington state line. Catch estimates below Bonneville Dam total 5,900 adult Chinook kept (1,500 non-adipose fin clipped released) for both mark-selective and non-selective fisheries. Catch estimates from Bonneville Dam upstream to Priest Rapids Dam total 700 adult Chinook kept (300 non-adipose fin clipped released) for both mark-selective and non-selective fisheries. Additional fisheries occur in the area upstream of Priest Rapids Dam and in tributaries but are not reported in this document.

Preliminary adult Summer Chinook kept and released in the 2015 sport mark-selective fishery.					
System	Area	Chinook Kept	Chinook Released	Total Handle	% Kept
Columbia River	Below BON (LCR)	2,000	1,300	3,300	61%
Columbia River	BON to PRD	300	300	600	50%

Tribal

Summer season fisheries occur from June 16 through July 31. Treaty Tribal fisheries are not mark-selective. Treaty Tribal fisheries are conducted in the mainstem Columbia River from Bonneville Dam upstream to McNary Dam (Zone 6). Platform and hook and line fisheries also occur in accordance with various MOUs in the area immediately below Bonneville Dam. Seven weekly commercial gillnet fishing periods were conducted June 16 – July 31. Platform and hook and line fisheries also occurred throughout the season, and fish were sold commercially or retained for subsistence use. Harvest estimates total 37,763 adult upper Columbia summer Chinook from mainstem fisheries. Minor summer season fisheries were also conducted in some Zone 6 tributaries and in tributaries upstream of McNary Dam. Tributary harvest is not reported in this document. The Colville and Wanapum tribes conduct C&S fisheries upstream of Priest Rapids Dam but harvest is not reported in this document.

Fall Fisheries

Non-Tribal Net

Fall season mainstem fisheries are typically categorized into early and late fall seasons. The early fall season generally encompasses the month of August, whereas the late fall season generally begins in mid-September and continues through October. Time, area, and gear restrictions were in place for all fall season commercial fisheries. In 2015 the early fall season consisted of 1-3 periods per week during August 9 – 31 (10 periods). The late fall season consisted of 1-5 periods per week during September 15 – October 20 (10 periods). A small mark-selective fishery using seine gear was also implemented. The seine fishery occurred during August 24- September 30. Since 2013 a MSF tangle net fishery targeting hatchery Coho has been conducted. The 2015 MSF Coho fishery consisted of three 12-hour periods. Landings included 1,000 hatchery coho (500 non-adipose fin clipped released). Harvest estimates total 84,000 fall Chinook (4,200 non-adipose fin clipped released) for the entire season (all gear types).

Preliminary adult Fall Chinook and Coho kept and released in the 2015 Commercial non-tribal seine net mark-selective fishery.									
		Fall Chinook				Coho			
System	Area is Below BON. Gear type is:	Kept	Released	Total Handle	% Kept	Kept	Released	Total Handle	% Kept
Columbia River	Beach Seine	600	300	900	67%	50	100	150	33%
Columbia River	Purse Seine	2,200	3,600	5,800	38%	500	600	1100	45%

Preliminary Coho handle in the 2015 Commercial non-tribal Tangle Net mark-selective fishery.					
System	Area is Below BON. Gear type is:	Coho Kept	Coho Released	Total Handle	% Kept
Columbia River	Tangle Net	1,000	500	1,500	67%

Sport

Fall season fisheries are mark-selective for Coho and in recent years have included a brief mark-selective period for Chinook in the Buoy 10 area and in an 80-mile stretch in the lower Columbia River. The Buoy 10 fishery was open August 1- December 31; Chinook retention was allowed August 1 – 28 and October 1 – December 31 (with mark-selective regulations in place during August 24-28). Regulations at Buoy 10 include minimum size limits for Chinook (24-inches) and Coho (16-inches). Released fish would include adult and jack hatchery and wild fish that did not meet the size requirement, adult and jack fish requiring released under any mark-selective regulations and adult and jack fish requiring release under non-retention regulations. Buoy 10 catch estimates include 36,400 Chinook kept and 36,900 hatchery Coho kept. Released fish (hatchery, wild, adults and jacks) include 23,600 Chinook and 23,200 Coho. The mainstem sport fishery from the Rocky Point – Tongue Point line upstream to Bonneville Dam was open August 1 – December 31. In the area from the Rocky Point – Tongue Point line upstream to the Lewis River, mark-selective rules for Chinook were in effect September 8 – 14; then the area closed for Chinook retention during September 15-30. Catch estimates for the fishery downstream of Bonneville Dam include 41,500 adult Chinook kept and 6,000 released. The mainstem sport fishery from Bonneville Dam to the Highway 395 Bridge (near Pasco, Washington) was open August 1 – December 31. Catch estimates for this area total 13,000 adult fall Chinook. Additional fisheries occur on the Columbia River in the Hanford Reach area (downstream of Priest Rapids Dam), in tributaries and in the Snake River but are not reported in this document.

Preliminary adult Fall Chinook kept and released in the 2015 sport mark-selective fishery.					
System	Area	Chinook Kept	Chinook Released	Total Handle	% Kept
Columbia River	Buoy 10	6,400	7,500	13,900	46%
Columbia River	LCR Sport	1,300	3,600	4,900	27%
System	Area	Coho Kept	Coho Released	Total Handle	% Kept
Columbia River	Buoy 10	36,900	23,200	60,100	61%

Tribal

Fall season fisheries occur from August 1 through December 31. Tribal fisheries are not mark-selective. Tribal fisheries are conducted in mainstem Columbia River from Bonneville Dam upstream to McNary Dam (Zone 6). Platform and hook and line fisheries also occur in accordance with various MOUs in the area immediately below Bonneville Dam. Platform and hook and line fisheries were open and allowed commercial sales through Dec 31. The commercial gillnet fishery consisted of seven weekly fishing periods August 17 – October 2. Preliminary harvest estimates for all fall season fisheries total 254,403 adult fall Chinook and 2,711 adult coho. Fisheries are also conducted in some Zone 6 tributaries and in the Snake and Clearwater Rivers. Harvest of chinook in tributary fisheries is not reported in this document.

Puget Sound Fisheries

In 2015, Puget Sound marine fisheries of interest to the Pacific Salmon Commission were regulated to meet conservation and allocation objectives for Chinook, Coho, Chum, Pink and Sockeye salmon stocks, per Tribal-State agreement. For Puget Sound Chinook listed under the ESA, fisheries were managed according to the Puget Sound Chinook Harvest Management Plan (PSIT and WDFW 2010). This management plan defines limits to total exploitation rates for natural stocks and was determined by the National Marine Fisheries Service (NMFS) to be consistent with requirements specified under the ESA 4(d) Rule.

Release requirements were applied to many sport and net fisheries for Chinook, Coho, Pink and Chum salmon, the latter to protect ESA-listed Hood Canal and Strait of Juan de Fuca summer Chum.

Puget Sound marine fisheries were constrained by the need to meet management objectives for ESA listed Puget Sound Chinook, including Lake Washington, Nisqually, Skagit, Skokomish, and Puyallup River Chinook. Interior Fraser Coho was the primary Coho management unit of concern for managing fisheries in the Strait of Juan de Fuca and northern Puget Sound.

Strait of Juan de Fuca Sport

Selective Chinook retention was allowed for sport fishing in salmon management Area 5 from February 16 – April 10 and Area 6 from December 1, 2014 – April 10, 2015. Sport fishing regulations allowed retention of marked Chinook and marked Coho beginning July 1 in Areas 5 and 6. Chinook mark-selective fishing opportunity was limited to the period through August 15. The sport fishery remained open to a Coho mark-selective opportunity through September 30, excluding eight days in September in Area 5 and through September 30 in Area 6. Wild Coho retention was legal September 12-14, 19-21 and 26-27 in Area 5 and October 1 – 31 in Area 5 and 6. Selective retention of Chinook was legal in Area 5 and Area 6 from October 1 – 31. An additional mark-selective fishery for Chinook is open from December 1 – 31, 2015 in Area 6. The preliminary estimate for Area 5 Chinook retained for the entire open fishing period July 1 – August 15 was 4,908 fish. A preliminary estimate of Coho retained for the mark-selective and non-selective open periods was 26,662 fish.

Preliminary estimates of Chinook retained, released (legal and sub-legal size), and the legal-size mark rate in the Area 5 sport mark-selective fishery, July 1 – August 15, 2015.			
Chinook retained	Chinook released	Total encounters	Mark % (legal size)
4,908	32,440	37,348	55%

Preliminary estimates of Coho retained, released and the mark rate in the Area 5 Coho mark-selective sport fishery, July 1 – September 18 and September 26-October 31, 2015.			
Coho retained	Coho released	Total encounters	Mark %
16,230	26,834	43,064	37%

A detailed report of this summer period sport fishery, including catch, effort and results of sampling and monitoring programs, will be available from the Washington Department of Fish and Wildlife in early 2016.

Strait of Juan de Fuca Tribal Troll (Area 4B, 5, and 6C)

During the winter Tribal troll fishery in Areas 4B, 5, and 6C (November 1, 2014 – April 15, 2015), 3,500 Chinook were caught. In the summer Tribal troll fishery in Areas 5 and 6C only (June 1 – September 30, 2015), 1,600 Chinook and 900 Coho were caught. The Tribal catch estimates from this area do not include catch from Area 4B during the May-September PFMC management period, which have been included in the North of Cape Falcon Tribal ocean troll summary.

Strait of Juan de Fuca Tribal Net

Preliminary estimates of the 2015 catch in the Strait of Juan de Fuca Tribal net fisheries (no non-Tribal net fisheries in the Strait of Juan de Fuca) are 700 Chinook and 700 Coho salmon.

San Juan Islands Net (Areas 6, 7, and 7A)

Preliminary estimates of the 2015 catch in the San Juan Island net fishery directed at Sockeye, Pink or Chum salmon total 45 Chinook and 400 Coho salmon for the Non-Tribal fishery. Tribal fishery landings from this area for all gear types total 4,700 Chinook and 3,600 Coho.

San Juan Islands (Area 7) Sport

Marked Chinook retention was allowed in the entire area for the period December 1, 2014 – January 28, 2015 and January 29 through February 15, 2015 on Fridays through Sundays. The numbers of Chinook retained and released by anglers during this fishery were estimated by an intensive sampling program and are presented in the table below. A detailed report of this fishery, including catch, effort and results of sampling and monitoring programs, is available from the Washington Department of Fish and Wildlife. The southern and southeastern (Rosario Strait) portions of this catch area were again closed July 1 – September 30 to protect Puget Sound Chinook salmon. The remaining area was open for retention of Chinook and Coho salmon from July 1 – October 31. Release of unmarked Coho salmon was required for the months of August through September and for unmarked Chinook during October. Additional sub area closures are described in the Washington State Sport Fishing Rules Pamphlet. Catch estimates and sampling information for this area for the period May 1 – November 30 are not available at this time.

Estimated Chinook retained, released (legal and sub-legal size) and the legal size mark rate in the Area 7 sport mark-selective fishery, December 1, 2014 – February 15, 2015.			
Chinook retained	Chinook released	Total encounters	Mark % (legal size)
3,447	6,508	9,955	79%

Inside Puget Sound (Areas 8-13) Sport

Mark-selective sport fisheries directed at hatchery Chinook were conducted in Area 8.1 (Skagit Bay & Saratoga Passage), Area 8.2 (Port Susan & Port Gardner), Area 9 (Admiralty Inlet), Area 10 (Seattle – Bremerton), Area 11 (Tacoma), and Area 12 (Hood Canal) during the winter (October, 2014 – April, 2015) period, and in Areas 9, 10, 11, 12, and 13 (South Puget Sound) during the summer (May – September, 2015) period.

Detailed reports of these fisheries, including retained and released encounters, effort and mark rates from sampling and monitoring programs, will be available from the Washington Department of Fish and Wildlife in the spring of 2016.

Mark-selective sport fisheries directed at hatchery Coho were conducted in Area 13 for the period July 1 to October 31, 2015.

Puget Sound Chinook mark-selective sport fisheries conducted in marine areas during the period October 1, 2014 through December 31, 2015.

Areas	Season
8.1 & 8.2	November 1, 2014 – April 30, 2015
9	November 1-30, 2014; Jan 16 – April 15, 2015; July 16 – July 26, 2015; and delayed opening for winter fishery.
10	October 1, 2014 – January 31, 2015; July 16 – September 30, 2015 (Sinclair Inlet only); and October 1 – December 18, 2015
11	February 1 – April 30, 2015 and June 1 – December 31, 2015
12	February 1 – April 30, 2015 and July 1 – December 31, 2015
13	May 1 – December 31, 2015

Puget Sound Marine Net (Areas 8-13 & 7B-D)

To achieve conservation objectives for natural Puget Sound Chinook and Coho, limited marine net fishing opportunities directed at returns of hatchery Chinook and both hatchery and natural returns of Coho were planned for 2015Chinook and Coho were also intercepted in fisheries directed at Pink and Chum salmon. A total of 33,700 Chinook and 22,300 Coho were landed in Puget Sound marine net fisheries (Areas 8-13 & 7B-D) during 2015.

Puget Sound Rivers Fisheries

Tribal net and non-Tribal sport fisheries directed at salmon in this region were implemented based upon pre-season, Tribal-State agreements and subject in part to in-season adjustment. The Net harvest (in Puget Sound Rivers by Tribal fisheries) included catch from river systems in the Strait of Juan de Fuca, Hood Canal, and Puget Sound. A total of 21,900 Chinook and 15,300 Coho were landed in Puget Sound River net fisheries during 2015. Many net fisheries were closed early in-season due to much lower than predicted natural Coho returns as well as small fish size and ongoing drought conditions.

Mark-selective fisheries directed at Chinook salmon were also conducted in the following Puget Sound Rivers with PSC Chinook coded wire tag (CWT) exploitation rate indicator stocks or double index tag (DIT) groups:

Chinook mark-selective sport fisheries conducted in Puget Sound Rivers, 2015.	
River	Season
Nooksack River	September 1 - 30
Cascade River (Skagit)	June 1 – July 15
Skagit River	June 1 – July 15
Nisqually River	January 1 – 31; July 1 –December 31
Skokomish River	August 1 – September 1

A Coho mark-selective fishery (MSF) occurred on the Skagit River from September 1 – October 18, 2015. This recreational coho MSF closed early on October 19 because in-season run size assessments indicated that Skagit coho run sizes were significantly below pre-season forecasts. During 2015, no other mark-selective sport fisheries were conducted in any Puget Sound Rivers with PSC Coho CWT exploitation rate indicator stocks or DIT groups.

References

Pacific Salmon Treaty (PST) Act of 1985. 2008 Agreement. U.S.-Canada. Public Law 99-5, 16 U.S.C. 3631.

Puget Sound Indian Tribes and Washington Department of Fish & Wildlife (PSIT and WDFW). 2010. Comprehensive Management Plan for Puget Sound Chinook: Harvest Management Component. Northwest Indian Fisheries Commission, Olympia, Washington. 237 p.

Pacific Fishery Management Council (PFMC). 2008. Fishery Regulation Assessment Model (FRAM): An Overview for Coho and Chinook v3.0. Pacific Fishery Management Council, Portland, Oregon. 43 p.

Table 15.- Preliminary 2015 Landed Chinook Catches for Washington and Oregon Fisheries of Interest to the Pacific Salmon Commission. Values are presented in number of fish rounded to the nearest 100. [9/]

	2015			Landed				
	Preseason [/13]		Preliminary Landed					
FISHERIES	Total Mortality [1/]	Landed [2/]		2014	2013	2012	2011	2010
OCEAN FISHERIES								
Commercial Troll								
Neah Bay and La Push (area 3,4,4B) [3/]	95,300	77,500	73,500	77,100	63,700	79,500	43,000	39,600
Columbia Ocean Area and Westport (area 1,2) [14/]	82,000	49,500	52,100	39,400	28,400	20,600	18,500	49,000
Sport (see text for quota information)								
Neah Bay (area 4) [4/]	11,300	9,400	8,500	5,900	6,200	5,600	3,000	3,300
La Push (area 3) [4/]	3,400	2,800	2,400	1,600	2,400	1,300	1,500	1,200
Westport (area 2) [4/]	42,300	35,600	19,200	23,500	13,700	19,500	19,100	27,000
Columbia Ocean Area (area 1) [4/]	22,600	16,200	12,200	11,300	8,600	9,100	7,200	7,200
INSIDE FISHERIES								
Sport [10/]								
Strait of Juan de Fuca (area 5,6) [5/]	19,300	12,600	5,000	12,600	14,900	13,900	9,500	9,100
San Juan Islands (area 7)	10,800	8,900	na	9,200	9,500	5,800	6,500	3,600
Puget Sound (area 8-13)	19,600	10,600	na	14,900	16,600	22,000	11,600	15,600
Puget Sound Rivers [12/]	17,800	17,200	na	12,200	19,600	23,200	18,200	15,600
North WA Coastal Rivers	na	na	na	1,200	2,900	1,600	2,300	1,300
Grays Harbor [7/]	na	na	na	1,500	3,800	4,600	3,400	2,200
Columbia River (Spring) [6/]	na	na	23,100	19,400	8,400	17,000	16,100	34,500
Columbia River (Summer) [6/]	na	na	5,100	2,300	2,100	3,200	5,500	3,400
Columbia River (Fall) (incl. Buoy 10) [6/]	na	na	91,200	62,400	74,500	47,000	44,300	29,400
Commercial [11/]								
Strait of Juan de Fuca net and troll (area 4B,5,6C)	7,200	5,900	5,800	6,000	4,000	4,000	4,300	4,000
San Juan Islands (area 6,7,7A)	8,500	8,400	4,800	6,900	3,900	400	5,700	6,800
Puget Sound Marine (area 8-13;7B-D)	38,100	37,300	33,700	28,400	70,100	75,600	63,200	40,600
Puget Sound Rivers [12/]	39,300	39,300	21,900	21,400	34,400	38,300	37,500	40,700
North WA Coastal Rivers	na	na	15,700	20,200	14,400	12,500	11,800	9,000
Grays Harbor (area 2A-2D) [7/]	na	na	10,500	5,100	2,900	5,300	8,200	4,600
Columbia River Net (Winter/Spring) [8/]	na	na	37,600	28,200	11,200	23,800	20,100	52,000
Columbia River Net (Summer) [8/]	na	na	41,700	22,200	15,300	9,500	25,600	20,500
Columbia River Net (Fall) [8/]	na	na	338,000	365,900	312,500	119,800	183,600	163,800

Table 15 Footnotes

[1/] Estimates of total mortality (not adjusted for adult equivalents) include non-retention mortality. Total Mortality is estimated by Fishery Regulation Assessment Model (FRAM) as catch + incidental mortality, where incidental mortality = drop off + non-retention mortality (PFMC 2008).

[2/] For the ocean fisheries, this column shows the Chinook troll and recreational quotas used for 2015 pre-season fishery planning as distributed by ocean area (Landing Quotas = Landed). See text for any in-season adjustments.

[3/] Includes Area 4B catch during the PFMC management period (May 1 – September 15); Area 4B Treaty troll catch outside PFMC period included under Strait of Juan de Fuca net and troll (October-April).

[4/] Includes catch from the spring mark-selective fishery.

[5/] 2015 catch represents creel estimates from July 1 - October 31 in Area 5 only, since Catch Record Card (CRC) annual estimates are not yet available.

[6/] Mainstem retained sport catch only (upstream to McNary Dam for spring, Priest Rapids Dam for summer and to Hwy 395 for fall). See tables 10, 22-23 in the current Joint Staff Report regarding spring and summer Chinook and tables 25-27 in the annual fall report. http://wdfw.wa.gov/fishing/crc/staff_reports.html.

[7/] Includes Grays Harbor catch, as well as catch from the Chehalis and Humptulips Rivers and their tributaries for sport and Chehalis and Humptulips Rivers for net estimates.

[8/] Mainstem retained catch only, includes tribal ceremonial and subsistence (C&S) and tribal commercial and non-tribal commercial for all gear types from Columbia River fisheries upstream to McNary Dam. See tables 10, 18, 27 & 28 annual Joint Staff Reports regarding Winter/Spring fisheries and Tables 20, 24 & 26 in the Fall report.

[9/] Includes catch from mark-selective fisheries as shown in table 3.

[10/] Sport data for the most recent two years are preliminary.

[11/] Includes Non-Tribal and Tribal commercial and take home, as well as Tribal Ceremonial and Subsistence for all gear types. Starting in 2012, the Copalis, Moclips, and Ozette Rivers have been removed from the landed catch.

[12/] Chinook fisheries in Puget Sound Rivers are modeled using the Terminal Area Management Module (TAMM), based upon FRAM output of terminal run sizes. Total Mortality is estimated in TAMM as catch + non-retention mortality (PFMC 2008).

[13/] FRAM modeled pre-season fishery impacts cover the current fishery planning year, for Chinook defined as May 1 through April 30.

[14/] Includes Oregon troll catch in Area 1

Table 16. - Preliminary 2015 Landed Coho Catches for Washington and Oregon Fisheries of Interest to the Pacific Salmon Commission. Values are presented in number of fish rounded to the nearest 100.[6/]

	2015			Landed				
	Preseason [9/]							
FISHERIES	Total Mortality [1/]	Landed [2/]	Preliminary Landed	2014	2013	2012	2011	2010
OCEAN FISHERIES								
Commercial Troll								
Neah Bay and La Push (area 3,4,4B) [3/]	51,600	46,000	4,100	60,100	48,800	38,600	14,200	9,600
Columbia Ocean Area and Westport (area 1&2) [10/]	28,000	16,200	4,800	19,000	5,300	2,700	3,000	5,000
Sport (see text for quota information)								
Neah Bay (area 4)	19,100	14,900	7,800	5,600	6,500	7,500	3,100	3,700
La Push (area 3)	4,700	3,700	600	4,600	2,800	2,200	2,100	1,200
Westport (area 2)	65,600	52,800	30,800	54,500	20,400	12,000	13,800	12,600
Columbia Ocean Area (area 1)	93,900	79,400	44,500	75,100	20,500	11,400	26,700	24,900
INSIDE FISHERIES								
Sport [7/]								
Strait of Juan de Fuca (area 5,6) [4/]	40,900	35,200	26,700	66,200	41,300	76,200	21,400	13,600
San Juan Islands (area 7)	1,500	1,300	na	2,000	2,600	2,200	900	600
Puget Sound Marine (area 8-13)	52,000	49,500	na	60,000	72,100	91,300	34,500	6,000
Puget Sound Rivers	39,400	37,600	na	17,900	70,000	43,500	40,400	9,600
North WA Coastal Rivers	1,000	1,000	na	8,900	8,000	3,400	7,900	5,800
Grays Harbor [5/]	18,300	17,400	na	27,200	21,200	18,300	14,600	12,500
Columbia River Buoy 10	54,500	45,000	36,900	57,700	7,600	7,400	7,600	8,000
Commercial [8/]								
Strait of Juan de Fuca net and troll (area 4B,5,6C)	3,800	3,700	1,600	2,400	2,700	3,600	2,800	3,200
San Juan Island (area 6,7,7A)	13,000	7,000	3,900	20,000	19,600	10,500	11,300	4,700
Puget Sound Marine (area 8-13,7B-D)	189,900	185,600	22,300	108,200	169,800	236,200	136,700	101,800
Puget Sound Rivers	94,600	92,700	15,300	73,000	137,400	123,600	89,100	64,200
North WA Coastal Rivers	58,200	57,100	16,800	101,000	44,000	38,300	82,900	95,300
Grays Harbor (area 2A-2D) [5/]	55,000	53,900	13,900	80,300	30,400	44,000	32,300	30,800

Table 16 Footnotes:

1/ Estimates of total mortality include non-retention mortality. Total Mortality is estimated by Fishery Regulation Assessment Model (FRAM) as catch + incidental mortality, where incidental mortality = drop off + non-retention mortality (PFMC 2008).

2/ For ocean fisheries this column shows the Coho troll and recreational quotas used for 2015 pre-season fishery planning as distributed by ocean area (Landing Quotas = Landed). See text for any in-season adjustments.

3/ Includes area 4B catch during the PFMC management period (May 1 – September 15); area 4B Treaty troll catch outside the PFMC period included under Strait Juan de Fuca net and troll (October-April).

4/ 2015 catch represents creel estimates from July 1 - October 31 in area 5 only, since catch record cards (CRC) annual estimates are not yet available.

5/ Includes Grays Harbor catch, as well as catch from the Chehalis and Humptulips Rivers; their tributaries are included in sport estimates only.

6/ Includes catch from mark-selective fisheries where estimates are available.

7/ Sport data for the most recent two years are preliminary. All data subject to change. For Buoy 10, kept catch only, see tables 25 in the annual fall report. http://wdfw.wa.gov/fishing/crc/staff_reports.html.

8/ Includes Non-Tribal and Tribal commercial and take home, as well as Tribal ceremonial and subsistence (C&S) for all gear types. Starting in 2012, the Copalis, Moclips, and Ozette Rivers have been removed from landed catch.

9/ FRAM modeled pre-season fishery impacts cover the current fishery planning year, for Coho defined as January 1 through December 31.

10/ Includes Oregon troll catch in Area 1

Table 17. - Mark-Selective Chinook and Coho Fisheries by Area and Year. "Yes" denotes that a mark selective fishery occurred, even if it only occurred in a subset of the fishing area, season, gear type, or user group.

Selective Coho	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**	**2009**	**2008**
Ocean Troll								
Cape Flattery & Quillayute (Areas 3/4)	yes	yes	yes	yes	yes	yes	yes	yes
Columbia R & Grays Harbor (Areas 1 & 2)	yes	yes	yes	yes	yes	yes	yes	yes
Ocean Sport								
Neah Bay (Area 4)	yes	yes	yes	yes	yes	yes	yes	yes
LaPush (Area 3)	yes	yes	yes	yes	yes	yes	yes	yes
Grays Harbor (Area 2)	yes	yes	yes	yes	yes	yes	yes	yes
Col. R. (Leadbetter Pt. to Cape Falcon)	yes	yes	yes	yes	yes	yes	yes	yes
Sport								
Juan de Fuca (Areas 5 & 6)	yes	yes	yes	yes	yes	yes	yes	yes
San Juan Islands (7)	yes	yes	yes	yes	yes	yes	yes	yes
Puget Sound Sport (Areas 8-13 all year)	yes	yes	yes	yes	yes	yes	yes	yes
Puget Sound Rivers	yes	yes	yes	yes	yes	yes	yes	yes
North WA Coastal Rivers	yes	yes	yes	yes	yes	yes	yes	yes
Grays Harbor (Areas 2-2)	yes	yes	yes	yes	no	yes	yes	yes
Columbia River Buoy 10	yes	yes	yes	yes	yes	yes	yes	yes
Commercial								
North WA Coastal Rivers	no	no	no	no	no	no	no	no
Grays Harbor (Areas 2A-2D)	yes	yes	no	no	yes	yes	yes	no
Columbia River Net/ - Fall	yes	yes	yes	no	no	no	no	no
Strait of Juan de Fuca (Areas 4B/5/6C) Net & Troll	no	no	no	no	no	no	no	no
San Juan Islands (Areas 6, 7 & 7A)	yes	yes	yes	yes	yes	yes	yes	yes
Puget Sound Marine (Areas 8-13)	no	no	no	no	no	no	no	yes
Puget Sound Rivers	no	no	no	no	no	no	no	no
Selective Chinook	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**	**2009**	**2008**
Ocean Troll								
Cape Flattery & Quillayute (Areas 3/4/4B)	no	no	no	no	no	no	no	no
Columbia. R & Grays Harbor (Areas 1 & 2)	no	no	no	no	no	no	no	no
Ocean Sport								
Neah Bay (Area 4)	yes	yes	yes	yes	yes	yes	no	no
La Push (Area 3)	yes	yes	yes	yes	yes	yes	no	no
Grays Harbor/Westport (Area 2)	yes	yes	yes	yes	yes	yes	no	no
Col. R./Ilwaco (Leadbetter Pt. to Cape Falcon)	yes	yes	yes	yes	yes	yes	no	no
Sport								
Juan de Fuca (Area 5 & 6)	yes	yes	yes	yes	yes	yes	yes	yes
San Juan Islands (Area 7)	yes	yes	yes	yes	yes	yes	yes	no
Puget Sound Sport (Areas 8-13)	yes	yes	yes	yes	yes	yes	yes	yes
Puget Sound Rivers	yes	yes	yes	yes	yes	yes	yes	yes
North WA Coastal Rivers	yes	yes	yes	yes	yes	yes	yes	yes
Grays Harbor (Areas 2-2)	yes	yes	yes	yes	no	no	no	no
Columbia River Sport - Winter/Spring	yes	yes	yes	yes	yes	yes	yes	yes
Columbia River Sport - Summer	yes	yes	yes	yes	yes	yes	no	no
Columbia River Sport - Fall	yes	yes	yes	yes	no	no	no	no
Commercial								
North WA Coastal Rivers	no	no	no	no	no	no	no	no
Grays Harbor (Areas 2A-2D)	yes	yes	yes	yes	no	no	no	no
Columbia River Net-Winter/Spring	yes	yes	yes	yes	yes	yes	yes	yes
Columbia River Net - Summer	no	no	no	no	no	no	no	no
Columbia River Net - Fall	yes	yes	yes	no	no	no	no	no
Strait of Juan de Fuca(4B/5/6C) Net & Troll	no	no	no	no	no	no	no	no
San Juan Islands (Areas 6, 7 & 7A)	yes	yes	yes	yes	yes	yes	yes	yes
Puget Sound Marine (Areas 8-13)	yes	no	no	no	yes	yes	no	no
Puget Sound Rivers	yes	yes	yes	yes	yes	no	no	no

Preliminary Review of the 2015 Washington Chum Salmon Fisheries of Interest to the Pacific Salmon Commission

This summary report provides a preliminary review of the 2015 U.S. Chum salmon (Oncorhynchus keta) fisheries conducted by Puget Sound salmon co-managers (Puget Sound Treaty fishing tribes and the State of Washington) in the Strait of Juan de Fuca (Salmon Management and Catch Reporting Areas 4B, 5 and 6C), the San Juan Islands and the Point Roberts area (Areas 7 and 7A) (Figure 39), conducted in compliance with provisions of Chapter 6 of Annex IV of the Pacific Salmon Treaty (PST 2008). The harvest and abundance information provided are based on preliminary data reported through November 15, 2015 and is subject to correction and revision as additional information becomes available.

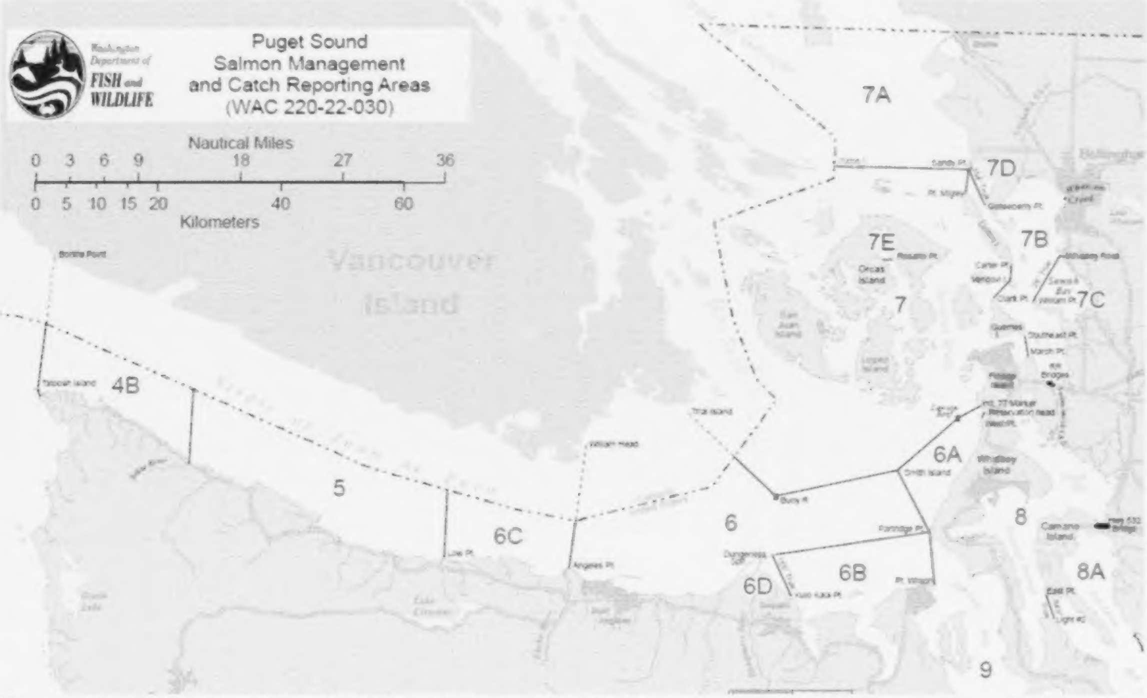
Washington Department of FISH and WILDLIFE
Puget Sound
Salmon Management
and Catch Reporting Areas
(WAC 220-22-030)
Nautical Miles
0 3 6 9 18 27 36
0 5 10 15 20 40 60
Kilometers
Vancouver Island
Strait of Juan de Fuca
7A
7D
7E
7B
7
7C
4B
5
6C
6
6A
8
6B
6D
8A
9

Figure 39. - Puget Sound Salmon Management and Catch Reporting Areas with Chum salmon fisheries of interest to the Pacific Salmon Commission.

Mixed Stock Fisheries

Areas 4B, 5 and 6C

As in previous years, the Chum salmon fishery in Areas 4B, 5 and 6C was restricted to Treaty Indian fishers using gillnets. The fall Chum-directed salmon fishery opened the week of October 11, with a schedule of six days per week and continued through November 14. A total of 7,013 Chum salmon were harvested during this period. However, including incidental catches of Chum salmon prior to the Chum-directed fishing season, a total of 7,958 Chum salmon were harvested (Table 18). During the fall Chum fisheries in Areas 4B, 5, and 6C, there was a reported by catch of 124 Coho, zero Chinook, and zero Steelhead.

Table 18. - Preliminary 2015 Chum Salmon Harvest Report for Washington Salmon Catch Reporting Areas 4B, 5, 6C

Areas 4B, 5, 6C	
Treaty Indian, Gill Net Only	
Time Periods	GN
Through 9/19	126
9/20-9/26	23
9/27-10/3	6
10/4-10/10	790
10/11-10/17	2,938
10/18-10/24	2,349
10/25-10/31	1,500
11/1-11/7	226
11/8-11/14	0
Total	7,958

Areas 7 and 7A

Chum salmon fisheries in Areas 7 and 7A are regulated to comply with a base harvest ceiling of 130,000 Chum salmon, unless a critically low level of abundance is identified for those stocks migrating through Johnstone Strait ("Inside Southern Chum salmon") (PST 2008). Chapter 6 of Annex IV specifies that U.S. commercial fisheries for Chum salmon in Areas 7 and 7A will not occur prior to October 10. Paragraph 10 (a-b) specifies run sizes below 1.0 million as critical (estimated by Canada). For run sizes below the critical threshold, the U.S. catch of Chum salmon in Areas 7 and 7A will be limited to those taken incidentally to other species and in other minor fisheries, and shall not exceed 20,000. U.S. commercial Chum fisheries during 2015 were initiated on October 10.

Paragraph 10 (d) states that Canada will provide an estimate of Fraser River Chum salmon run size no later than October 22. If that estimate is below 900,000, then the U.S. will limit its fishery to not exceed a catch of 20,000 additional Chum salmon from the day following notification. An estimated Fraser River Chum salmon run size of 1,567,000 was provided by Canada on October 21. Paragraph 10(d) further states that the total catch is not to exceed 130,000 Chum Salmon. The fishery was therefore continued through October 23. Total U.S. catch between October 10 and October 23 in Areas 7 and 7A was 124,847 Chum salmon (Table 2). The Non-Treaty gillnet and purse seine fleets were open daily October 12, 13, 15 and then continuously from October 19 through October 22. The Treaty Indian gillnet and purse seine fisheries were opened on October 10 and ran continuously through October 23.

Non-Indian reef net fisheries targeting adipose-marked Coho salmon were conducted from the end of Fraser Panel control in Area 7 (September 8) until September 30, with Chum salmon retention prohibited. From October 1 through October 22, reef nets were open daily with Chum salmon retention allowed. The reef net fishery was reopened from October 25 through November 7, but there was no effort during this period. Chum salmon catch in this fishery, between October 1 and November 7, was 5,851 fish. Although the reef net fishery was re-opened, there was no reef net fishing effort after October 22.

The total 2015 Chum salmon catch by all gears in Areas 6, 7, and 7A, reported through October 23, was 125,322 (Table 20). Catch distribution, between Areas 7 and 7A, was 77% and 23% respectively. However, it should be noted that these catch reports may be incomplete as of the date of this report. There were 33 Chum salmon reported as incidental catch in Areas 7 and 7A during Fraser Panel approved Sockeye salmon directed fisheries during August and September. During the fall Chum salmon-directed fisheries in Areas 6, 7 and 7A, there was a reported by-catch of 3,282 Coho, 19 Chinook, and zero Steelhead (Table 3).

In 2014, for the first time under the 2008 PST Chum agreement, the U.S. landed the full share of 130,000 Chum salmon allowed to be caught in Area 7/7A in a non-critical year under the current Chapter 6 of the Pacific Salmon Treaty (PST) (Table 2). Chapter 6.10 (h) of the PST provides guidance for overage calculations, as follows: "Catches in excess of 135,000 Chum shall result in an overage being calculated by subtracting 130,000 from the total Chum catch. Overages will be accounted for by reducing the U.S. annual catch ceilings in up to two subsequent non-critical Inside Southern Chum salmon years." As shown in Table 2, the total U.S. catch (tribal and non-tribal) in Area 7/7A during 2015 was 124,847 Chum, with a payback to Canada of 5,153 Chum in the first year. Therefore, the remaining number of Chum owed to Canada in the next non-critical year is 11,418 (Table 19).

Table 19. - U.S. 7/7A Chum Catches, 2009-2015

Year	Total U.S. catch	Total U.S. Share	Uncaught share	Overage vs. 130K share	Number Paid Back in 2015 [a/]	Remaining Number Owed to Canada [b/]
2009	24,073	130,000	105,927	0		
2010	23,404	130,000	106,596	0		
2011	60,485	130,000	69,515	0		
2012	72,866	130,000	57,134	0		
2013	79,650	130,000	50,350	0		
2014	146,571	130,000	0	16,571		
2015	124,847	130,000	0	0	5,153	11,418

[a] (U.S. share of 130,000) - (Total U.S. actual catch in 2015 of 124,847) = 5,153 Chum paid back to Canada in 2015.

[b] Remaining Chum owed to Canada in the next non-critical year: (Overage in 2014 at 16,571) - (Amount paid back in 2015 at 5,153) = Remaining amount of 11,418.

Table 20. - Preliminary 2015 Chum Salmon Harvest Report for Washington Salmon Catch Reporting Areas 6,7, 7A

	Area 6	Area 7				Area 7A			Area 6, 7, 7A
Time Periods	GN	PS	GN	RN	Area Total	PS	GN	Area Total	Total
Through 9/26	0	25	0	0	25	7	1	8	33
9/27-10/3	0	0	0	878	878	0	0	0	878
10/4-10/10	0	2,130	0	1,539	3,669	0	0	0	3,669
10/11-10/17	475	43,159	1,040	3,220	47,419	10,498	7,003	17,501	65,395
10/18-10/24	0	40,081	3,433	214	43,728	5,251	6,368	11,619	55,347
10/25-10/31	0	0	0	0	0	0	0	0	0
11/1-11/7	0	0	0	0	0	0	0	0	0
Total	475	85,395	4,473	5,851	95,719	15,756	13,372	29,128	125,322
Gear Type Abbreviations: GN=Gill Net; PS=Purse Seine; RN=Reef Net									
10/10- 11/7 By-catch	Coho: 3,280		Chinook: 19		Steelhead: 0				

Puget Sound Terminal Area Fisheries and Run Strength

Pre-season forecasts for Chum salmon returns to Puget Sound predicted a fall Chum run size totalling approximately 956,000 fish. As of the date of this report, in-season estimates indicate that Chum returns to Puget Sound are generally at or above forecast with some exceptions. In-season run size updates from the 2015 fall Chum fisheries in Hood Canal and South Puget Sound indicate those runs are above forecast at 617,091 and 565,000, respectively. Some Puget Sound Chum fisheries are still underway and additional in-season estimates of abundance may occur. As of the date of this report, spawning escapement surveys are in progress for most Puget Sound stocks and therefore escapement estimates are not yet available. Early indications from these surveys do however suggest that nearly all stocks will meet escapement goals; although, some central Puget Sound Fall Chum stocks appear to be below forecast again this year.

References

Pacific Salmon Treaty (PST) Act of 1985. 2008 Agreement. U.S.-Canada. Public Law 99-5, 16 U.S.C. 3631.

Preliminary Review of 2015 United States Fraser River Sockeye and Pink Salmon

Introduction

The 2015 Fraser River Panel fishing season was implemented under Annex IV of the Pacific Salmon Treaty (PST), and guidelines provided by the Pacific Salmon Commission to the Fraser River Panel. The treaty establishes a bilateral (U.S. and Canada) Fraser River Panel (Panel) that develops a pre-season management plan and approves in-season fisheries within Panel Area waters directed at sockeye and pink salmon bound for the Fraser River (Figure 40). In partial fulfilment of Article IV, paragraph 1 of the PST, this document provides a season review of the 2015 U.S. Fraser River salmon fisheries as authorized by the Panel. Catch and abundance information presented is considered preliminary.

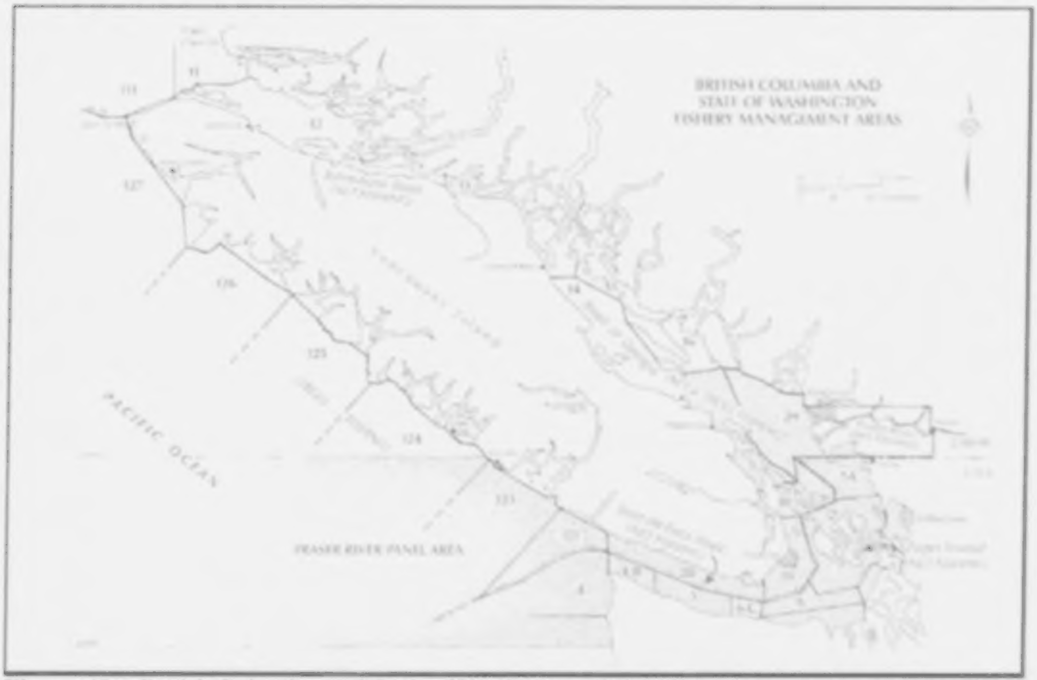

Figure 40. - British Columbia and State of Washington Fishery Management Areas, 2015. The shaded area in the figure represents the marine waters managed by the Fraser River Panel.

Preseason Expectations and Plans

Forecasts and Escapement Goals

Pre-season run size forecasts and escapement goals by run timing group (run) at various probability levels were provided to the Panel by the Department of Fisheries and Oceans, Canada (DFO). Table 21 shows the 2015 agreed pre-season sockeye forecasts based on the 50 percent probability level forecasts, which represent the mid-point of the range of possible run sizes for all runs with the exception of Early Stuart. For Early Stuart, the 25 percent probability level forecast was used for pre-season planning. This approach was agreed to due to the expectation for overall low abundance and the very high proportions of age 5 fish in the forecast. Table 21 also provides the escapement goals for the sockeye run timing groups based on the pre-season forecasted abundance. The escapement goals for all runs can change in-season as the run size estimates are updated.

Fraser River pink salmon returns were projected pre-season at 14,455,000 fish, with an escapement goal of 6 million fish.

Table 21. - 2015 pre-season Fraser River sockeye forecasts and escapement goals by run timing group.

	Early Stuart	Early Summer	Summer	Lates	Total
Forecast of Abundance	16,000	837,000	4,675,000	1,236,000	6,764,000
Escapement Goal	16,000	334,800	1,636,300	494,400	2,481,500

Diversion

Northern diversion rate is defined as the percentage of Fraser sockeye migrating through Johnstone Strait (rather than the Strait of Juan de Fuca) in their approach to the Fraser River. Due to much higher than average sea surface temperatures (SST) in May, the pre-season diversion forecast for sockeye was 96% (compared to the long-term average of 62%). An updated forecast in July using both May and June SSTs predicted a diversion rate of 95%. For pink salmon, the average northern diversion rate since 1997 of 56% was used for pre-season planning.

Management Adjustments (MA) and Environmental Conditions

Management adjustments (MA) for sockeye salmon reflect the anticipated difference between escapement estimates at Mission (minus catch above Mission) and actual spawning escapements. Adjustments adopted by the Panel are added to the gross escapement goal, effectively increasing the spawner escapement goal for that run timing group. For 2015, MAs were modelled using forecasts of environmental conditions and return timing or median historical differences between estimates. Table 22 provides the pre-season projected MAs that were used for planning fisheries. In-season management adjustments use MA models that are based on both measured and forecasted temperatures and discharges or, for Late-run sockeye, upstream migration timing.

Table 22. - 2015 pre-season proportional management adjustment (pMA) and corresponding management adjustments (MA) for each run group.

Early Stuart		Early Summer		Summer		Lates	
pMA	MA	pMA	MA	pMA	MA	pMA	MA
0.68	10,900	1.0	334,800	0.17	278,200	0.95	469,700

Run Timing

Run timing is temporal information about the presence of a salmon stock in a specific time and area. Run timing is an important variable when planning fisheries and predicting run size in-season. The following Area 20 50% dates (the dates when 50% of the run is forecasted to have passed through Area 20) were predicted pre-season for the major Fraser River sockeye run groups and for Fraser River pink salmon.

Table 23. - 2015 Area 20 historic 50% run timing dates and updated pre-season timing forecasts in June. For this report the historic run timing dates are used for pre/post season comparison purposes.

Run Group	Area 20 50% Run Timing Historic Date	Area 20 50% Run Timing (June)
Early Stuart	July 4	July 8
Early Summers	July 30	August 1
Summers	August 8	August 7
Lates	August 16	August 17
Pink salmon	August 28	August 28

U.S. Total Allowable Catch (TAC)

Pre-season, the U.S. TAC was established at 444,100 sockeye across all run groups and 2,119,000 pink salmon. The TAC available by sockeye run group is shown in Table 24.

Table 24. - 2015 total US total allowable catch (TAC) by run group.

Run Group	Pre-season US TAC
Early Stuart	0
Early Summers	18,900
Summers	395,300
Lates	29,900
Total	444,100

Preseason Management Plans

During the pre-season planning process, the Panel evaluates and adopts management approaches for Fraser sockeye and pink salmon that address conservation and harvest objectives for each major run group. The Panel develops fishing plans and in-season decision rules with the objective of meeting management goals. Managing Fraser River sockeye and pink salmon involves a trade-off between catching abundant runs and meeting escapement objectives for less abundant run groups.

In 2015, the pre-season forecast of ~6.8 million sockeye resulted in available U.S. TAC across all run groups except the Early Stuart (Table 24). The majority of TAC was in the Summer run group.
In 2015, Panel concerns about performance of MA models based on environmental conditions, along with uncertainty in long-term environmental forecasts available pre-season, led the panel to adopt MA values based on medians of past years' MAs.

While planning pre-season fishing schedules, the U.S. Section had available TAC across the Early Summer run, Summer run, and Late run groups. Pre-season fishing schedules were developed to start fishing during the peak of the Early Summer run migration. The more limited TAC available for the Late run group was anticipated to delay the start time for pink salmon directed fisheries and to limit the number of Treaty and All Citizens fishery openings.

In-Season Management

In-season, the Pacific Salmon Commission staff analyses a variety of information to produce best estimates of northern diversion, management adjustments, run-timing, abundance, and harvest by run group. These estimates are created using stock identification information (both genetic data and scales), test fishing data, escapement counts past Mission, harvest data, and environmental information.

Run Assessment

The final in-season abundance estimates for 2015 (Table 25) indicate that sockeye returned at ~31% of the pre-season forecast when summed across all run groups. Individual run group abundance varied considerably from 13% of forecast for Late run sockeye to 200% above forecast for Early Stuart. Both Early Summer and Summer sockeye run groups performed similarly relative to pre-season expectations, with respective returns of 45% and 33% of the pre-season forecast. The return of pink salmon was only 40% of the pre-season forecast.

The 2015 Fraser sockeye return was later than historic timing for all run groups but the Early Summer run (Table 26). Run timing ranged from 2 days late for Early Stuart (50% date July 6) to 5 days late for Late run sockeye (50% date August 21). In comparison, timing for pink salmon was 6 days earlier than the long-term average.

Table 25. - Comparison of 2015 pre-season vs. in-season abundance estimates for Fraser River sockeye salmon by run group and for pink salmon.

Run Group	Pre-Season 50% Probability Forecast	In-Season Run Size Estimate	Comparison: In-Season / Pre-Season Forecast
Early Stuart	16,000[1]	32,000	200%
Early Summer	837,000	373,000	45%
Summer	4,675,000	1,549,000	33%
Lates	1,236,000	165,800	13%
Total Sockeye	6,764,000	2,119,800	31%
Pink salmon	14,455,000	5,781,300	40%

[1] 25% probability level forecast adopted by Panel for Early Stuart.

Table 26. - Comparison of 2015 preliminary 50% run timing dates through Area 20 to in-season-estimates.

Run Group	Pre-season 50% Run Timing Date	In-season 50% Run Timing Date
Early Stuart	July 4	July 6
Early Summer	July 30	July 30
Summer	August 8	August 10
Lates	August 16	August 21
Pink salmon	August 28	August 22

Season Description

Prior to July 25:

Run size Changes: Early Stuart sockeye run size was changed to 30,000 and migration was considered nearly complete.
Timing: The Early Stuart sockeye Area 20 50% migration timing date was estimated to be July 7th, 3 days later than pre-season expectations.
Diversion: The 5-day average northern diversion rate for sockeye was 34%.
Stock ID: Early Stuart migration in marine areas was nearing completion and Summer run and Early Summer run sockeye were the dominant groups migrating through marine areas.
Environmental Conditions/MA: In-river temperatures decreased after a peak of 20.5°C on July 13th, but were forecasted to rise over the next week. River discharge was below the historical average at ~3,000 m3s-1. The Early Stuart management adjustment was increased to 4.18 (0.68 pre-season).
Fisheries: All Treaty Indian and All Citizens' fisheries remain closed.

Week ending August 1:

Run size Changes: There were no changes to run group sizes this week.
Timing: There were no changes to Area 20 50% migration timing date for any run group this week.
Diversion: The 5-day average northern diversion rate for sockeye was estimated to be 35%.
Stock ID: Marine test catches were dominated by Summer run sockeye (80%), followed by Early Summer run (20%).
Environmental Conditions/MA: In-river discharge was ~ 34% lower than the historical average for this date at 2,922 m3s-1, and in-river temperatures were 19°C. Temperatures were forecasted to increase over the next week. No changes were made to the MA this week.
Fisheries: Treaty Indian fisheries were open in areas 4B/5/6C on July 25 – August 1. All Citizens' fishing remains closed.

Week ending August 8:

Run size Changes: Run size for Early Stuart was increased to 32,000 (pre-season 16,000), and the Early Summer run size was decreased to 424,000 (pre-season 837,000).
Timing: The Area 20 50% migration timing date was changed for Early Stuart to July 6 (pre-season July 4) this week.
Diversion: The northern diversion rate for sockeye continued to increase with a 5-day average diversion rate of 54% (average of purse seine and gillnet test fisheries).
Stock ID: Stock ID proportions showed a progression in the migration and subsequent expected changes in stock proportions compared to the previous week with Summer run sockeye making up the largest proportion (86%) followed by Early Summer run (13%), and Late run sockeye (1%) through Juan de Fuca Strait. The first pink salmon stock ID samples from Area 20 indicated about 37% of the pinks present were of Fraser River origin.
Environmental Conditions/MA: In-river temperature decreased slightly to 18.7°C (0.7°C above average), and river discharge was ~36% below average for this date at 2,530 m3s-1. No changes were made to the MA this week.
Fisheries: Treaty Indian fisheries in areas 4B/5/6C remained open. Treaty Indian fisheries in areas 6/7/7A were open on August 1, 3, and 6. All Citizens' fisheries in areas 7/7A opened on August 1 with openings for reef nets on August 1, 6, 7, and 8; and gillnet and purse seine openings on August 2, 5, 7, and 8.

Week ending August 15:

Run size Changes: Early Summer, Summer, and Late sockeye run groups were downgraded to 350,000; 1,150,000; and 419,000, respectively.

Timing: Early Summer sockeye run timing was updated to July 29th, 1 day earlier than pre-season expectation.
Diversion: The 5-day average Fraser sockeye northern diversion rate through Johnstone Strait increased to 78% and the pink salmon diversion rate was estimated to be 10%.
Stock ID: Late run sockeye were beginning to build in test fisheries with 8% of Area 20 test catches from the Late run. Summer run sockeye made up the largest portion of stock ID samples at 83%, followed by the Early Summer run at 8%. Pink salmon stock ID samples from Area 20 indicated about 55% of the pinks present were of Fraser River origin.
Environmental Conditions/MA: In-river temperatures increased from the previous week to 19.8°C (1.8°C above average) but were forecast to decrease over the next week. Fraser River discharge continued to decline to 2,440 m3s-1, which is ~30% below the historical average. No changes were made to the MA this week.
Fisheries: Treaty Indian fisheries in areas 4B/5/6C were open daily this week from August 9 - 12, while areas 6/7/7A were open on August 9-11. All Citizens' fisheries were closed.

Week ending August 22:

Run size Changes: Summer run sockeye run size was updated to 1,600,000.
Timing: Summer run sockeye migration timing was updated to August 11 (3 days later than pre-season).
Diversion: 5-day average sockeye diversion through Johnstone Strait continued to increase to 90% and pink salmon diversion increased to 53%.
Stock ID: Early summer and Summer run abundance started to decline this week with test catches made up of 4% Early Summer run, 82% Summer run and 14% Late run. Pink salmon stock ID samples from Area 20 indicated about 75% of the pinks present were of Fraser River origin.
Environmental Conditions/MA: In-river temperatures remained above average at 19.7°C (1.7°C above average), while river discharge was ~28% below average at 2,203 m3s-1. No changes were made to the MAs this week.
Fisheries: All Treaty Indian and All Citizens' fisheries were closed.

Week ending August 29:

Run size Changes: Early Summer and Summer sockeye run sizes were increased to 400,000 and 1,700,000 respectively this week. No changes were made to the Late run size.
Timing: Early Summer migration timing was changed to July 31 (1 day later than pre-season) and Summer run timing was changed to August 12 (4 days later than pre-season).
Diversion: Sockeye migration continued to increase through Johnstone Strait this week with 5-day average sockeye northern diversion rate at 95% while the average rate for pink salmon diversion declined to 23%.
Stock ID: Early Summer run migration was largely complete with none estimated in Area 20 samples. Summer run and Late run abundances remained strong at 45% and 55%, respectively. Pink salmon stock ID samples from Area 20 indicated about 67% of the pinks present were of Fraser River origin.
Environmental Conditions/MA: In-river temperature declined slightly over the last week to 18.1°C (0.9°C above average). River discharge remained below average at 1,828 m3s-1 (30% below average). No changes were made to the MA this week.
Fisheries: Treaty Indian fisheries opened August 25-29 in areas 4B/5/6C while Treaty Indian fisheries in areas 6/7/7A were open August 27-29. All Citizens' gillnet and purse seine fisheries in areas 7/7A were open August 25 and 26 while reef nets were open August 26 and 27.

Week ending September 5:

Run size Changes: The Late run size was decreased to 300,000 sockeye. Pink salmon run size was decreased from the pre-season forecast of 14,455,000 to 6,000,000 fish.
Timing: Late run sockeye migration timing was moved back to August 23 which is 7 days later than the pre-season forecast. Timing for pink salmon was moved to August 21 which was 7 days earlier than pre-season expectations.

Diversion: 5-day average diversion of sockeye through Johnstone Strait is estimated to be 99%. 5-day average northern diversion for pink salmon increased to 77%.
Stock ID: Stock ID proportions were dominated by Summer run sockeye at 76%, followed by 22% Late run sockeye.
Environmental Conditions/MA: River discharge increased over the past week to 1,982 m3s-1; ~19% below average. River temperatures dropped by 2.0°C since last week, and were 16.1°C this week (0.4°C below average). No changes were made to the MA this week.
Fisheries: Treaty Indian fisheries opened August 29-September 2 in areas 4B/5/6C while Treaty Indian fisheries in areas 6/7/7A were open August 31 - September 1. All Citizens' gillnet and purse seine fisheries in areas 7/7A were open August 30 and September 1 while reef nets were open August 30, 31 and September 1.

Week ending September 12:

Run size Changes: Summer and Late sockeye run sizes were decreased to 1,500,000 and 200,000, respectively. Pink salmon run size was increased slightly to 6,200,000.
Timing: Timing of Summer and Late run sockeye were updated to August 10 (2 days later than pre-season) and August 21 (5 days later than pre-season), respectively. Pink salmon migration timing was changed to August 22 (6 days earlier than pre-season).
Diversion: Diversion of sockeye through Johnstone Strait is now ~99%. Pink salmon 5-day average northern diversion increased to 91%.
Stock ID: Stock ID samples from Johnstone Strait indicated Late run sockeye were 53% of the total migration while 47% were Summer run.
Environmental Conditions/MA: No environmental condition updates were provided to the Panel this week. No changes were made to the MA this week.
Fisheries: All Treaty Indian and All Citizens' fisheries were closed.

After September 12:

Run size Changes: No further changes were made to run sizes.
Timing: No further in-season changes were made to stock migration timing.
Diversion: No further in-season changes were made to sockeye or pink salmon northern diversion rates.
Stock ID: Stock ID samples from the remainder of the season were dominated by Late run sockeye followed by Summer run sockeye.
Environmental Conditions/MA: Updated environmental conditions were not distributed after the Summer run migration had ended. The MA for Late run sockeye is not updated using environmental conditions.
Fisheries: All Treaty Indian and All Citizens' fisheries were closed.

Harvest

Between July 25 and Sept. 2 the United States caught a total of 46,501 Fraser River sockeye and 334,717 Fraser River pink salmon in Panel area waters (Tables 27 and 28). During this period Treaty Indian fisheries in Areas 4B/5/6C were open for a total of 25 days and in Areas 6/7/7A for 8 days. The All Citizens fishery in Areas 7/7A was open for 9 days for reef nets and 8 days for gillnet and purse seine gears. The Treaty Indian fishery caught 35,138 sockeye and 190,104 pink salmon while the All Citizens fishery caught 11,363 sockeye and 144,613 pink salmon.

Table 27. - Preliminary estimate of 2015 U.S. catches of Fraser River sockeye salmon in Panel area waters.

	Treaty Indian	All Citizens
Ceremonial and Subsistence (all areas)	2,023	0
Commercial Catch in Areas 4B/5/6C	806	0
Commercial Catch in Areas 6/7/7A	32,309	11,363
Total Catch	35,138	11,363
% of U.S. Catch	75.6%	24.4%

Table 28. - Preliminary estimate of 2015 U.S. catches of Fraser River pink salmon in Panel area waters.

	Treaty Indian	All Citizens
Ceremonial and Subsistence (all areas)	3,352	0
Commercial Catch in Areas 4B/5/6C	533	0
Commercial Catch in Areas 6/7/7A	186,219	144,613
Total Catch	190,104	144,613
% of U.S. Catch	56.7%	43.2%

C. 2015 POST-SEASON REPORT FOR CANADIAN TREATY LIMIT FISHERIES

Introduction

The chapters in Annex IV of the Pacific Salmon Treaty outline the joint conservation and harvest sharing arrangements between Canada and the United States of America (U.S.) for key stocks and fisheries subject to the Treaty. On December 23, 2008, Canada and the U.S. ratified new provisions for five chapters under Annex IV of the Pacific Salmon Treaty. These chapters came into effect on January 1, 2009 and remain in force until 2018. Chapter 4, which covers Fraser River sockeye and pink salmon, was revised in July 2014 and these revisions cover fisheries in 2014 through 2019. All management regimes under Annex IV continue to be implemented by Fisheries and Oceans Canada (DFO) for the 2015 season.

The catches reported in this document provide the best information available to December 1, 2015, and may change once all catch information for 2015 has been reviewed. The catches are based on in-season estimates (hailed statistics); on-grounds counts by DFO, logbooks, dockside tallies, landing slips (First Nation fisheries), fish slip data (commercial troll and net), creel surveys and observers (recreational and commercial).

Annex fisheries are reported in the order of the Chapters of Annex IV. Comments begin with expectations and management objectives, escapements (where available and appropriate) and catch results by species. The expectations, management objectives, catches and escapements focus on those stocks and fisheries covered by the Pacific Salmon Treaty. Table 53 summarizes 1996-2015 catches in Canadian fisheries that have at some time been under limits imposed by the Pacific Salmon Treaty.

Annually, DFO releases a Salmon Outlook document which is referenced in various sections of this report; this document provides a preliminary indication of salmon production, and associated fishing opportunities by geographic area and species stock groups called an Outlook Unit for the coming season.
All Southern commercial, recreational, First Nations, Excess Salmon to Spawning Requirements (ESSR) and test fisheries are reported in Tables 60-63.

Transboundary Rivers

Stikine River

Canada developed a fishing plan for Stikine River salmon fisheries based on the catch sharing and management arrangements outlined in Annex IV, Chapter 1, Paragraph 3 of the Pacific Salmon Treaty (PST), including the arrangements agreed to on January 17, 2008 for the 2009 to 2018 period. Accordingly, the 2015 management plan was designed to meet agreed escapement targets and the following harvest objectives: 1) to harvest 50% of the total allowable catch (TAC) of Stikine River sockeye salmon in existing fisheries; 2) to allow additional harvesting opportunities in terminal areas for enhanced sockeye that were surplus to spawning requirements; 3) to harvest up to 5,000 coho salmon in a directed coho fishery; and 4) to harvest up to 1,890 coho in a directed chinook fishery in addition to a harvest of up to 2,300 coho as a base level catch in the directed sockeye fishery. A pre-season forecast of 30,200 chinook exceeded the PST threshold run size of 28,100 which allowed for a directed chinook fishery in 2015.

In 2015 Canada was obligated under Annex IV, Chapter 1, Paragraph 4 of the PST to take corrective actions to bring future catches in alignment with Treaty provisions. This paragraph was triggered given that Canada exceeded its Treaty catch share of sockeye salmon on three occasions during the past five years. As such, Canada reduced its TAC of Tahltan Lake sockeye by 10 percent, which mirrors the average TAC overage Canada harvested since 2010.

The 2015 commercial fishing season opened on May 3 (statistical week 19) and ended September 10 (statistical week 37). From statistical weeks 19 through 25, the commercial fishing fleet engaged in a directed chinook fishery. From statistical weeks 26 through 34 a directed sockeye fishery was prosecuted followed by a directed coho fishery which ended in statistical week 37.

Commercial gear consisted of one 135-metre (443 ft.) gill net per licence holder. The maximum mesh size allowed was 204 mm (8") through June 20, after which time the maximum mesh size was restricted to 140 mm (5.5"). The lower Stikine commercial fishing grounds covered the area from the international (U.S. / Canada) border upstream to near the confluence of the Porcupine and Stikine Rivers, and also included the lower 10 km (6 mi.) reach of the Iskut River. The upper Stikine commercial fishing grounds covered the area located upstream from the Chutine River.

In the upper Stikine commercial fishery, the fishing periods generally mirrored those in the lower Stikine commercial fishery, but lagged by one week. Fishers were permitted one net. As in past years, the commercial fishing area was extended upstream to the mouth of the Tuya River. This action was taken in order to provide for a terminal fishing opportunity on Tuya River sockeye salmon, specifically at sites located upstream of the Tahltan River. For the eighth consecutive year, no commercial fishing activity occurred at this site. The Tuya run, which consists entirely of sockeye produced from the Canada-U.S. Stikine enhancement program, has no spawning escapement requirement since these fish are unable to return to Tuya Lake due to several velocity barriers located in the lower reach of the Tuya River. Tuya sockeye are released into Tuya Lake as young of the year juveniles.

The First Nation Food, Social, and Ceremonial (FSC) fishery located near the community of Telegraph Creek, British Columbia (B.C.) was active from the last week in May to the third week in August, with no time or gear restrictions imposed in 2015.

Most of the chinook salmon recreational fishing effort in the Stikine River watershed typically occurs in the lower reach and at the mouth of the Tahltan River. Additional activity occurs less intensively in the Iskut River and other areas within the Stikine River drainage. Recreational fishing activity commenced in late June and lasted until the third week of July with retention being approximately 35% above the ten year average. In 2015, the Tahltan First Nation encouraged its members to not fish in a chinook holding area that is located below the slide area near the beginning of the Tahltan River canyon.

A rock slide occurred in Tahltan River in 2014. In March of 2015 a crew of two people over a period of approximately two weeks drilled holes into large boulders in which inert expanding cement was applied. The results were that the boulders were fragmented into much smaller sizes that were manually moved downstream and also moved downstream by the affects off the spring freshet. Approximately fifty cubic meters of rock was moved. The work done at the site increased the width of the water channel which decreased the velocity of the water and provides for increased migration success. The effects of the rockslide on chinook and sockeye migration in 2015 have not been summarized at this point.

Chinook Salmon

The pre-season forecast of 30,200 large (i.e. fish with a mid-eye to fork length of >660mm (~26") or a fork length of >735mm (~29") Stikine River chinook salmon, as developed by the Canada / U.S. Technical Committee for the Transboundary Rivers (TCTR) allowed for a directed chinook fishery in 2015. A pre-season forecast run size of <28,100 precludes Canada or the U.S. from scheduling a directed fishery, whereas an in-season run size of >24,500 large chinook is required to permit a targeted chinook fishery. Based on the pre-season forecast and an escapement goal of 21,000 the allowable catch (AC) in the directed chinook fishery was 1,890 and the base line catch (BLC) in the directed sockeye fishery was 2,300.

The directed chinook fishery commenced on May 3rd (statistical week 19) and ended on June 14th (statistical week 25). The total combined gill net catch of chinook salmon in the First Nation and commercial fisheries included 4,157 large chinook salmon and 1,537 jacks compared to 2005 - 2014 averages of 6,847 large chinook salmon and 1,243 jacks, while the sockeye test fishery yielded a harvest of 25 large chinook and 59 jack chinook salmon compared to the 2005-2014 averages of 18 large chinook salmon and 14 jack chinook salmon. The 2015 recreational fishery yielded a total catch of 75 large chinook salmon and 25 jack chinook salmon compared to the 2005-2014 average of 49 large chinook salmon and 12 jack chinook salmon.

The pre-season estimate of 30,200 large chinook salmon held throughout the directed chinook fishery. An in-season chinook run forecast could not be generated due to weak data. Instead, a forecast of 28,131 large chinook salmon and an escapement goal of 17,400 was generated after the close of the directed chinook fishery. This increased the (AC) in the directed chinook fishery to 3,267.

The final post-season estimate of the terminal run was 27,042 large chinook salmon, including an in river run size based on mark-recapture data of 25,600 large chinook salmon and a total U.S. catch estimate of 1,442 large chinook salmon. Accounting for the total Canadian catch of 4,257 large chinook salmon (includes commercial, First Nation, recreational and test catches), the total system-wide spawning escapement was estimated at approximately 21,343 large chinook salmon. There were mortalities associated with the 2014 Tahltan River rockslide that will lower system-wide spawning escapement but results have not been summarized at this point. The escapement estimate of 21,343 is 23% above the target SMSY escapement goal of 17,400 large chinook salmon and within the escapement goal range of 14,000 to 28,000 large chinook salmon. The final post-season run size of 27,042 fish translated into an allowable Canadian harvest of 4,586 large chinook, while the U.S. was permitted a harvest of 3,654 large chinook in directed commercial fisheries.

The 2015 chinook salmon escapement enumerated at the Little Tahltan weir was 451 large chinook and 489 jack chinook salmon. The actual escapement of 451 large chinook salmon in the Little Tahltan River was well below the SMSY estimate of 3,300 fish and failed to meet the lower end of the escapement goal range of 2,700-5,300 large chinook salmon. The proportion of Little Tahltan escapement to the Stikine wide escapement was only 2%, while on average the contribution of this stock exceeds 14%. This is the ninth consecutive year that the lower end of the escapement objective was not achieved for Little Tahltan chinook salmon.

In addition to the mark-recapture study, the Little Tahltan weir project and aerial surveys, genetic samples were collected on a weekly basis from chinook salmon caught in the U.S. District 108 fishery, and from weekly catches taken in the Canadian commercial fishery. These data were used to determine the total U.S. interception of Stikine River chinook; the in river genetics will be analyzed to assess stock specific run timing and run size.

Sockeye Salmon

The forecast for Stikine River sockeye salmon, as developed by TCTR, was for a terminal run size of 171,200 fish including: 81,500 Tahltan Lake origin sockeye salmon (50,400 wild and 31,100 enhanced); 34,000 enhanced Tuya Lake sockeye; and 55,700 non-Tahltan wild sockeye salmon, which constituted a below average forecast. For comparison, the previous 10-year average (2005 - 2014) terminal run size was approximately 179,257 fish.

Preliminary combined catches from the Canadian commercial and First Nation gill net fisheries in the Stikine River totaled 60,046 sockeye in 2015; above the 2005 - 2014 average of 53,806 fish. The lower Stikine River commercial fishery harvested 51,660 sockeye, while the upper Stikine River commercial and First Nation fisheries harvested a total of 202 and 8,184 sockeye salmon, respectively. The preliminary estimate of the total contribution of sockeye salmon from the Canada/U.S. Stikine sockeye enhancement (i.e. the fry-planting program) to the combined Canadian First Nation and commercial catches was 29,602 fish (or 49% of the catch).

In addition to these catches, 1,865 sockeye salmon were taken in the stock assessment test fishery located near the U.S. / Canada border.

A total of 33,159 sockeye salmon was counted through the Tahltan Lake weir in 2015, 13.5% above the 2005 - 2014 average of 28,667 fish and slightly above the escapement goal range of 18,000 to 30,000 fish. An estimated 15,585 fish (47%) originated from the fry-planting program, which was slightly below the 49% contribution observed in smolts leaving the lake in 2012, the principal smolt year contributing to the 2015 return. A total of 3,871 sockeye salmon were collected for brood stock of which 400 were analyzed for stock identification purposes, resulting in a spawning escapement of 29,288 sockeye salmon in Tahltan Lake.

The total estimated run size of 71,686 Tahltan Lake sockeye was approximately 12% below the pre-season expectation of 81,500 fish.

The spawning escapements for the non-Tahltan and the Tuya stock groups are calculated using stock identification, test fishery and in-river commercial catch and effort data. The average of the test fishery and the commercial fishery catch-per-unit of effort (CPUE), which operated over the full duration of the run, were used as the principal tool in assessing the spawning ground escapements of non-Tahltan Lake and the Tuya sockeye stock groupings. Based on the run reconstructions generated from the test and commercial fishery CPUE, the preliminary escapement estimates for 2015 were 39,094 non-Tahltan and 22,971 Tuya sockeye salmon. The non-Tahltan spawning escapement estimate was within the escapement goal range of 20,000 to 40,000, was 23% above the mid-point escapement goal of 30,000 sockeye salmon, and above the 10 year average of 25,289 fish. The estimated escapement of 22,971 Tuya Lake sockeye salmon was well above the recent 10 year average of 10,935 fish. These fish do not contribute to the natural production of Stikine River sockeye salmon due to migration barriers that obstruct entry to their nursery lake and potential spawning areas.

Based on the in-river run reconstruction of the Tahltan Lake run expanded by run timing and stock identification data in the lower river and estimated harvests of Stikine River sockeye salmon in U.S. terminal gill net fisheries, the preliminary post-season estimate of the terminal sockeye run size is approximately 188,649 fish. This estimate includes 71,686 Tahltan Lake origin fish, 51,640 Tuya Lake origin fish, and 65,323 sockeye of the non-Tahltan stock aggregate. A Stikine River run size of this magnitude is above the 2005 - 2014 average terminal run size of 179,257 sockeye salmon and is approximately 9% above the preseason forecast of 171,200 fish.

Similar to 2008 - 2014, Canada relied on other in-season abundance estimates than those derived from the Stikine sockeye management model (SMM). As a result, most of the in-season run projections used in management of the Canadian fisheries were based on the average of the SMM model and an in-river regression model. The run size projections ranged from 109,500 fish in statistical week 28 to 219,800 fish in statistical week 35. The preliminary post-season estimate was 188,649 sockeye salmon with a Canadian allowable harvest of 57,760 fish. The actual harvest was 60,046 fish, slightly above the allowable catch.

Coho Salmon

For the seventh consecutive year, most of the commercial fishing fleet remained in the fishery to harvest coho salmon resulting in a total catch of 5,619 coho salmon. A catch of 4,923 coho salmon was taken during the targeted coho fishery in statistical weeks 35-37. The total catch was above the recent 10 year average of 3,825 fish.

A coho salmon test fishery was not conducted in 2015. Incidental catches and CPUE taken in the sockeye salmon test and commercial fisheries were well below average. The CPUE observed in the targeted coho salmon fishery was below average for statistical weeks 35 and 36 but above average for statistical week 37. Aerial surveys of six index spawning sites yielded below average counts taken under excellent viewing conditions.

Joint Sockeye Salmon Enhancement

Joint Canada/U.S. enhancement activities continued from 2014 through 2015 with the collection of sockeye salmon eggs from Tahltan Lake in British Columbia, transportation of eggs to the Snettisham Hatchery in Alaska where they were raised to fry, and subsequent transportation and release at out-plant sites in British Columbia.

Through late May and early June 2015 approximately 2.7 M fry were out-planted into Tahltan Lake. No fry were released into Tuya Lake. The fry originated from the 2014 egg-take and were mass-marked at the Snettisham hatchery with thermally induced otolith marks. Green egg to released fry survival was approximately 76%. No Tahltan Lake origin fry reared at the Snettisham hatchery were lost due to Infectious Hematopoietic Necrosis virus (IHNv). Sockeye salmon enhancement programs have been subject to IHNv outbreaks before as the disease is naturally occurring in Stikine sockeye stocks.

In the fall of 2015, approximately 4.5 M sockeye salmon eggs of a targeted 5.5 M were collected at Tahltan Lake and transported to Snettisham Hatchery in Alaska. As in previous years additional efforts beyond beach seining were employed to acquire brood stock including angling and temporarily holding female brood stock to mature in floating net pens in the lake. Some challenges were faced this year including similar concerns to 2014 regarding salmon passage around a rock slide barrier on the Tahltan River and bad weather delaying air transport of eggs to Snettisham Hatchery. Based on initial hatchery survival rates and historical egg to survival rates an estimated 3.2 M sockeye salmon fry will be available in 2016 for release.

Taku River

As with the Stikine River, the fishing plan developed by Canada for the Taku River was based on the arrangements in Annex IV, Chapter 1, Paragraph 3 of the PST in effect for 2009 through 2018. Accordingly, the plan addressed conservation requirements and contained the following harvest objectives: 1) harvest 20% of the TAC of Taku River sockeye salmon (adjusted as necessary according to projections of the number of enhanced sockeye), plus the projected wild sockeye in-river escapement in excess of 1.6 times the spawning escapement goal; 2) to harvest enhanced Taku River sockeye salmon incidentally to wild sockeye salmon; 3) to harvest 5,000, plus any excess over the escapement target of 70,000 coho salmon in a directed coho salmon fishery, dependent on in-river run size projections; and 4) to consider a directed chinook salmon fishery once weekly in-season estimates suggested an allowable catch, weekly harvest guidelines were to be adjusted down by 30% in response to poor Taku River chinook production in recent years.

The 2015 commercial fishing season on the Taku River opened on June 21 (statistical week 26), and closed on September 7 (statistical week 37) for the season due to poor coho salmon projections. Fishing area and gear restrictions were as per recent years, and incorporated the maximum gill net length of 36.6 metres (120 ft.), established in 2008 for drift gill nets and in 2009 for set gill nets.

The Taku River commercial fishing grounds in Canada consist of the mainstem of the river from the international border upstream approximately 18 km (11 miles), to a geological feature known locally as Yellow Bluff. Almost all fishing activity takes place in the lower half of this area, downstream of the Tulsequah River.

The First Nation FSC fishery is primarily located in the lower Taku River in the same area as the commercial fishery described above. However, small numbers of fish are also harvested on the lower Nakina River and at the outlet of Kuthai and King Salmon Lakes. There were no time or gear restrictions imposed on the First Nation fishery in 2015.

Most of the chinook salmon recreational fishing effort in the Taku watershed typically occurs on the lower Nakina River. Less intensively-used recreational fishing sites exist on the Tatsatua River, the Sheslay River and other areas within the Taku River drainage. Effort and catches are poorly documented but are believed to be negligible for all species except chinook salmon and steelhead (due to the remote nature of the watershed and difficult access).

Chinook Salmon

The bilateral pre-season forecast was for a terminal run of 26,100 large chinook salmon, approximately 25% below the previous 10-year average of 34,900 fish. The forecast generated by the Taku River chinook salmon model was 37,000 fish. However, due to persistent overestimation in recent years coupled with a pattern of decline in chinook salmon stocks in the North Pacific, the forecast was reduced by 41%. A forecast run size of 26,100 fish was slightly above the SMSY escapement goal of 25,500 fish, and as a result, there was no allowable catch (AC) for either the U.S. or Canada, and a minor adjustment to the base level catches (BLCs) of 1,500 fish for Canada and 3,500 fish for the U.S. was required. The test fishery allocation of 1,400 large chinook was unchanged.

The catches of large chinook salmon in the Canadian fisheries were: 1,357 in the test/assessment fishery; 868 large chinook salmon captured incidentally in the directed commercial sockeye salmon fishery; 117 large chinook salmon in the First Nation FSC fishery; and an estimated 105 large chinook salmon in the recreational fishery. The total base level and test/assessment fishery harvest of 2,447 large chinook salmon was within the allowance of 2,900 fish. In-season run projections did not identify an AC for Canada to conduct a directed fishery.

The bilaterally agreed Taku River large chinook spawning escapement estimate for 2015 was 28,850 fish which was above the SMSY target of 25,500 and within the goal range of 19,000 to 36,000. The 2005-2014 average spawning escapement is 26,231 large chinook (which was associated with a higher target until 2009). During aerial surveys of five index areas, a total of 3,297 large chinook salmon were observed; this was 10% below the 2005-2014 average.

The Canadian catch of large chinook was 70% below the 2005-2014 average of approximately 3,700 fish (excluding test/assessment fisheries). The 2015 harvest of small chinook was 317 fish (305 commercial and 12 First Nation FSC), 46% below the 2005-2014 average of 587 fish.

Sockeye Salmon

The Canadian pre-season run outlook for wild sockeye salmon was 216,000 fish, approximately 20% above the previous 10-year average total run size of 180,000 fish. In addition, approximately 6,700 adult sockeye salmon of Tatsamenie Lake origin were expected to return from fry out plants associated with the Canada/U.S. joint Taku sockeye salmon enhancement program. The forecasted return of enhanced Tatsamenie Lake origin sockeye salmon was 12% below the average return of 7,600 fish.

The Canadian sockeye salmon catch was 19,881 fish, of which 19,747 were taken in the commercial fishery, 85 in the First Nation FSC fishery, and 49 in assessment/test fisheries. This harvest was 5% below the 2005-2014 average total of 21,000 fish, with the contribution of sockeye salmon from the bilateral enhancement program estimated at 123 fish (<1% of the total Canadian catch).

To reduce by-catch of chinook salmon, the maximum permissible mesh size in the first two weeks of the directed sockeye salmon fishery which commenced in late June was 140 mm (5.5"). Projections of the total wild sockeye salmon run size, TAC, and total escapement were made frequently throughout the fishing season. As in past years, projections were based on the joint mark-recapture program, the estimated catch of Taku River sockeye in U.S. fisheries, the catch in the Canadian fishery, and historical run timing information. Projections in 2015 ranged from 90,000 in statistical week 28 (July 5-11) to 194,000 in statistical week 30 (July 19-25). The preliminary post-season estimate of run size is 191,735 fish (comprising 190,622 wild sockeye and 1,113 enhanced sockeye). Subtracting the escapement target of 75,000 from the wild run of 190,622 fish, resulted in a TAC of approximately 116,000 wild fish. The Canadian allowable catch, based on a 20% harvest share (which in turn is associated with an enhanced return of 1 to 5,000 fish), was 23,200 fish; the actual catch was 19,592 wild fish, representing 17% of the TAC of wild fish. Likewise, the U.S. allowable catch of wild fish, based on an 80% harvest share, was 92,800 fish; the actual catch was 40,904 fish, representing 44% of the TAC of wild fish.

The estimated spawning escapement of wild sockeye salmon in the Canadian section of the Taku River was 129,967 fish which was well above the target range of 71,000 to 80,000 fish. The escapement is 34% above the 2005-2014 average of 97,156 fish. Based on weir counts, escapements to the Kuthai, Little Trapper, Tatsamenie and King Salmon lakes were 341, 13,253, 1,537, and 1,683 sockeye salmon, respectively. The Kuthai Lake escapement was 79% below the primary brood year count, and 76% below the 2005-2014 average. The Little Trapper escapement was four times the primary brood year count and 53% above average. The Tatsamenie count was 56% below the primary brood year count and 82% below average while the escapement to King Salmon Lake was average.

Coho Salmon

The catch of 8,185 coho salmon (7,886 commercial and 299 First Nation FSC) was 4% below the 2005-2014 average of 8,483 fish. The catch during the directed commercial coho salmon fishery, after statistical week 33, was 5,459 fish. A test/assessment fishery was implemented in 2015, catching a total of 1,998 coho. Based on mark-recapture data, the preliminary bilateral estimate of the run into the Canadian section of the drainage is 70,361 fish. In accordance with PST harvest arrangements for the 2015 Taku River coho salmon season, at a run size of this magnitude; Canadian harvesters were entitled to harvest only 5,000 fish for assessment purposes starting in statistical week 34. The preliminary post-season spawning escapement estimate is 60,178 fish, 39% below the previous 10-year average of 99,213 fish. The 2015 escapement was below the recently revised target of 70,000 but within the goal range of 50,000 to 90,000 fish.

Joint Sockeye Enhancement

Joint Canada/U.S. enhancement activities continued from 2014 through 2015 with sockeye salmon fry hatched at Snettisham Hatchery in Alaska transported back to Tatsamenie Lake, British Columbia (where these fish were collected as eggs in 2014).

Approximately 87% of the 1.3 M sockeye salmon eggs collected in 2014 from Tatsamenie Lake survived to the fry stage at the Snettisham Hatchery in Alaska. Approximately 169,700 pre-emergent fry from one incubator were destroyed due to Infectious Hematopoietic Necrosis virus (IHNv). Sockeye salmon enhancement programs have been subject to IHNv outbreaks before and while unfortunate the losses are within normal occurrence levels.

Between May 22 and May 30, 2015 approximately 731,000 emergent sockeye salmon fry were out-planted into Tatsamenie Lake. In addition, as part of an onshore extended rearing project, approximately 187,000 fed fry were released into onshore rearing tanks and a trial net rearing pen. Mortality of these fish was observed soon after delivery and DFO veterinarian assistance was requested resulting in a successful treatment for a bacterial infection and reared fry were released shortly after treatment. Smolt production for the year was slightly above average with a preliminary estimate of 512,000. A breakdown of the origin of the smolts is underway pending otolith results.

Sockeye eggs were collected from King Salmon Lake in 2014 with a target of 250,000 eggs for a feasibility evaluation project. Total number of eggs collected and delivered to Snettisham Hatchery was 199,000. Green egg to fry survival was 89% resulting in 169,000 fry released back to King Salmon Lake on May 23, 2015.

For 2015, the agreed bilateral Taku River enhancement production plan (TEPP) identified collection of up to 2.0 M sockeye salmon eggs from Tatsamenie Lake and 250,000 eggs from Little Trapper Lake for transport to Snettisham Hatchery in Alaska for incubation and thermal marking. Approximately 731,000 sockeye salmon eggs were collected from Tatsamenie Lake as a result of unexpectedly low escapement to the lake limiting appropriate brood stock collection. No eggs were collected from Little Trapper as the egg take project was pending the identification of a proponent and the approval to re-establish salmon passage to Trapper Lake. In 2015 further project information was collected and a plan was developed to approach the passage project in support of a potential sockeye enhancement program for Trapper Lake.

Alsek River

Although catch sharing provisions for Alsek River salmon stocks between Canada and the U.S. have not yet been specified, Annex IV of the Pacific Salmon Treaty calls for the development and implementation of cooperative abundance-based management plans and programs for Alsek River chinook and sockeye salmon. In 2013, escapement goal ranges for Alsek River chinook and sockeye salmon were accepted by the Transboundary Rivers Panel, these are: 3,500 to 5,300 chinook and 24,000 to 33,500 sockeye salmon. Additionally, the escapement targets were revised for Klukshu River chinook and sockeye salmon, these are: 800-1,200 chinook and 7,500-11,000 sockeye. The principal escapement-monitoring tool for chinook, sockeye, and coho salmon stocks on the Alsek River is the Klukshu weir, in operation since 1976 by DFO in cooperation with the Champagne-Aishihik First Nation (CAFN).

Total drainage abundance programs are being investigated as part of the development of abundance-based management regimes and to accurately assess whether the escapement goals for Alsek River chinook and sockeye salmon stocks are appropriate and achievable. At this time, there are no programs in place to estimate the drainage-wide coho salmon escapement. A large and variable proportion of the escapement of each species is enumerated at the weir on the Klukshu River. Current escapement monitoring programs include the Klukshu River weir, Village Creek counter, and post-season run reconstructions using genetic stock identification analyses which allow for annual comparisons of escapement indices. The most reliable long-term comparative escapement index for Alsek River drainage salmon stocks is the Klukshu River weir count.

The harvest estimate for the 2015 First Nation FSC fishery is comprised of the fish taken from the Klukshu River weir (elders only) and an estimate of catches above/below the weir (based on the past relationship with the weir count and harvest). An estimated 87 chinook, 1,084 sockeye and zero coho salmon were harvested in the FSC fishery. The recent average catches are 57 chinook, 1,109 sockeye, and 6 coho salmon. Preliminary catch estimates for the Tatshenshini recreational fishery were an estimated 44 chinook salmon retained (48 released), and zero sockeye salmon retained (20 released). There were no coho recorded, although this value is considered incomplete as some effort and harvest may have occurred after monitoring ceased. The catches were 98%, 0%, and 0% of average for chinook, sockeye and coho salmon, respectively. No in-season restrictions were implemented as escapement objectives were met for both chinook and sockeye.

The preliminary weir count and escapement estimates of Klukshu River sockeye salmon in 2015 were 11,588 and 11,363 fish, respectively. The count of 2,604 early run fish (count through August 15) was above the average of 2,498 as was the count of 8,984 late run fish, with an average of 8,361. The total escapement of 11,363 fish was above the upper end of the escapement goal range of 7,500 to 11,000 fish. The sockeye salmon count at Village Creek was not completed in 2015 due to technical issues associated with the video monitoring system; average is 2,000 fish.

The most reliable comparative chinook salmon escapement index for the Alsek River drainage is considered to be the Klukshu River weir count. The preliminary chinook salmon weir and escapement estimate in 2015 was 1,432 and 1,388 fish, respectively. The 2015 escapement estimate was above the upper end of the escapement goal range of 800 to 1,200 Klukshu chinook salmon.

The Klukshu River coho salmon weir count was 1,810. The 2015 count, as in past years, is not considered a complete indicator of run strength as the weir is removed prior to the end of the coho salmon run to the Klukshu River.

Northern British Columbia

Pink Salmon

Areas 3-1 to 3-4 Pink Net Catch

For 2015, Canada was to manage the Area 3-1 to 3-4 net fisheries to achieve an annual catch share of 2.49% of the annual allowable harvest (AAH) of Alaskan Districts 101, 102 and 103 pink salmon. With a total return of approximately 20.59 million pinks, the Alaskan Districts 101, 102 and 103 AAH was approximately 12.08 million pinks. The resulting Sub-area 3-1 to 3-4 Canadian commercial net total allowable catch of this AAH was approximately 300,869 pinks of Alaskan Districts 101, 102 and 103 origin.

In the Canadian northern boundary area, pink salmon returns were anticipated to be average to below average for Area 3 and Area 4, based on brood year return strength. Actual returns to both Area 3 and Area 4 were below average. The 2015 preliminary Canadian pink salmon catch in Sub-areas 3-1 to 3-4 was 80,266, and the Alaska stock component of this catch is estimated to be 77,331 pieces, or 0.64% of the AAH. This result is well below the annex agreement of 2.49%.

Area 1 Pink Troll Catch

For 2015, Canada was to manage the Area 1 troll fishery to achieve an annual catch share of 2.57% of the annual allowable harvest (AAH) of Alaskan Districts 101, 102 and 103 pink salmon. With a Total Return of 20.59 million pinks, the resulting Area 1 Canadian commercial troll total allowable catch of this AAH was approximately 310,536 pinks of Alaskan Districts 101, 102 and 103 origin.

The Canadian commercial troll fishery targeting pink salmon was open in the northern portion of Area 1 (Dixon Entrance AB Line) from July 1 to September 30. Pink retention was also permitted during the Chinook-directed fishery in parts of Area 1, which was open from June 18 to July 31 and from August 25 to September 30. Effort directed at pink salmon in Area 1 was minimal in 2015. The fishery harvested a total of 41,551 pink salmon, with an estimated 39,462 pieces being of Alaskan origin. This equates to 0.33% of the Alaskan District 101, 102 and 103 pink AAH, well below the annex agreement of 2.57%.

Northern B.C. Chinook Aggregate Abundance Based Management (AABM)

The pre-season abundance index for North Coast B.C. troll and Haida Gwaii recreational chinook fisheries in 2015 was 1.23, which permitted a total allowable catch of 160,400 chinook salmon in these fisheries. Preliminary estimates indicate a total catch of 158,903 chinook salmon; 106,703 caught in commercial troll fisheries and 52,200 in recreational fisheries.

The North Coast B.C. troll fishery was opened for chinook fishing from June 18 to July 30 and from August 25 to September 30. The entire 2015 Northern B.C. troll fishery was conducted under a system of individual transferable quotas. The minimum size limit was 67 cm and barbless hooks and revival boxes were mandatory. No troll test fisheries were conducted in the North Coast of B.C. in 2015.

Recreational fishing was open with a daily limit of two chinook/day and a daily possession limit of four chinook. An estimated 52,200 chinook were caught in the Haida Gwaii (Queen Charlotte Islands) recreational fishery. A minimum size limit of 45 cm was in effect and barbless hooks were mandatory in the recreational fishery.

Northern B.C. Chinook Individual Stock-Based Management (ISBM)

Fisheries included in this category are commercial net fisheries throughout north and central B.C., marine recreational fisheries along the mainland coast and freshwater recreational, and First Nations FSC fisheries in both marine and freshwater areas. The PST obligations in these fisheries are for a general harvest rate reduction (estimated in aggregate across fisheries) for ocean mixed stock fisheries and for stock-specific objectives (i.e., achieving the escapement goal) in terminal areas.

North Coast commercial gill net catches totalled 2,434 chinook from Areas 3 to 6 (from hailed catch data). Chinook catch in Areas 3 and 4 were 1,792 and 621 chinook, respectively. No chinook were reported caught in Area 5 and only 21 were caught in Area 6. These preliminary estimates of gill net catches include chinook less than 5 pounds (graded as jacks and small red fleshed chinook) not normally included for PSC accounting. Small chinook typically makes up less than 5% of commercial gill net catches. Hail catch data tend to underestimate catch reported in fish slips by 25 to 30%. In addition, a total of 750 large chinook and 102 jacks were caught in the Tyee Test fishery on the Skeena River.

Central Coast commercial gill net catches totalled 5,333 chinook with 5,328 from Area 8 and 5 from Area 7 (from hailed catch data).

Tidal recreational catch from lodges operating in the Smiths Inlet, Rivers Inlet, Hakai Pass and Bella Bella areas were estimated using log books. Approximately 10,597 chinook were retained at lodges in these areas in 2015.

Preliminary estimates for tidal recreational catches near the mainland coast of Northern B.C. were 12,760 from a creel survey conducted in Areas 3 and 4 in 2015. The 2015 catches in the mainland recreational fishery in Areas 5 and 6 were not available at the time of writing. The preliminary estimate from a freshwater creel survey conducted in the Skeena River below Terrace in 2015 was 3,442 large chinook and 1,475 jacks. The tidal and freshwater catches of chinook salmon in Northern B.C were larger in 2015 than 2014.

Catches by First Nations in the North Coast exceeded 17,524 chinook in 2015. Nisga'a and Gitanyow catches from the Nass River were 8,503 chinook. Haida catches on Haida Gwaii were estimated at 2,530 chinook. Catches by First Nations fisheries in the Skeena River were estimated at 6,491 chinook.

Catches by First Nations in the tidal portion of the Central Coast were reported as 180 chinook. The non-tidal catches included 2,598 Atnarko River chinook (Area 8) and 2 chinook from Rivers Inlet (Area 9).

Northern B.C. ISBM Chinook Stock Status

Since assessments of the ISBM fisheries are relative to the escapements achieved in the chinook indicator stocks, a brief overview of the 2015 returns is provided. Northern B.C. terminal runs to the Nass and Skeena Rivers improved from relatively low returns observed in 2013 and 2014. Preliminary estimates of chinook escapements to the upper Nass River were 16,433. Preliminary Skeena River chinook escapements were approximately 41,694. Preliminary Petersen mark-recapture Atnarko River chinook escapement estimate was 57,615, the largest return of chinook salmon recorded for the system.

Southern B.C. Chinook Aggregate Abundance-Based Management (AABM)

Objectives and Overview

Chinook fisheries are managed by either an aggregate abundance-based management (AABM) or individual stock-based management (ISBM) regime. Allowable harvest impacts in AABM areas are determined by provisions in the Pacific Salmon Treaty and subject to domestic considerations, such as conservation and allocation. In Southern B.C., all AABM chinook fisheries are located off the West Coast Vancouver Island (WCVI), including components of the recreational fishery, First Nations fisheries, and the Area G troll fishery.

For the period October 2014 through September 2015, the forecast chinook abundance index was 0.85 of the PST base period. Therefore, under treaty provisions, the maximum allowable catch was 127,278 chinook for WCVI AABM fisheries; which includes a 30% reduction consistent with the treaty provisions that came into effect in January 2009.

Based on the WCVI AABM TAC, 69,141 was set aside for the pre-season expected catch for the offshore recreational and First Nations fisheries. The remaining 58,137 chinook were allocated to the commercial fisheries (Area G and T'aaq-wiihak).

Table 29. - Pre-Season and Post-Season Total Allowable and Preliminary Catch Estimates for October 2014-September 2015 WCVI AABM Chinook

	Pre-Season Estimate	**Post-Season Estimate**
WCVI AABM Abundance Index	0.85	under review
	Pre-Season TAC	**Post-Season Catch**
WCVI AABM chinook TAC*	127,278	under review
AABM Recreational	60,000[+]	48,775
First Nations (FSC)	5,000	996**
Maa-nulth Treaty	4,141	2,950**
T'aaq-wiihak demonstration	7,267	6,234
Area G Troll	50,870	54,338
Total AABM	**127,278**	**113,293**

*The total Area G troll TAC is calculated as the difference between the WCVI AABM chinook TAC less offshore recreational catch, NTC First Nations Expected FSC catch, Maa-nulth Domestic Allocation and T'aaq-wiihak Allocation.

**First Nations catch is preliminary.

[+] Pre-season expected catch

Further considerations for managing chinook catch in WCVI AABM fisheries are driven by concerns regarding the low status of natural WCVI, Lower Strait of Georgia (LGS), Fraser River Spring 42, Spring 52, Summer 52 chinook, and Interior Fraser coho populations.

Several ocean fisheries in Canada intercept WCVI origin chinook, including northern troll, Haida Gwaii recreational, WCVI troll and WCVI recreational. Ocean fisheries in Canada are limited to a 10% exploitation rate, even if PST provisions allow for a higher catch. Management measures are in place to reduce the impact of fisheries on WCVI origin chinook while still providing harvest opportunities.

Continued efforts were made in 2015 to limit the impact of the troll fishery on low-status chinook populations, including time and area constraints, and limits on effort (boat-days) to protect stocks of concern.

AABM chinook catch and release information from all fisheries can be found in Table 54.

Fisheries

First Nations Food Social and Ceremonial Treaty Fisheries

The 2015 WCVI Nuu-chah-nulth Tribal Council (NTC) AABM FSC chinook reported catch (at the time of this report) was 996, and catch from Maa-nulth Nations domestic fisheries was estimated at 2,950. Total AABM chinook reported for First Nations FSC and domestic fisheries was 3,946.

Recreational Fisheries

The WCVI AABM recreational chinook fishery primarily takes place in offshore Areas 121-127 from June to September. Chinook catch from inshore Areas 21-27 in June and Areas 21-24 in July are also included in the AABM estimate. Catch and effort are largely driven by abundance and weather, and together both can affect annual harvests. Previous sampling has indicated that there is minimal AABM catch and effort outside of this period.

Chinook management measures are in place in the near-shore AABM areas to protect migrating WCVI origin chinook. These measures include a 77 cm maximum size limit in those portions of Areas 123-127 that lie shoreward of a line drawn 1-mile seaward of the surf line. This area is commonly referred to as the 'Chinook Conservation Corridor', and is in place to protect migrating WCVI origin chinook. In areas along the WCVI, where hatchery origin chinook are considered to make up a high portion of the recreational catch, anglers are permitted to retain two chinook per day of which one can be larger than 77 cm. The mandatory use of barbless hooks and a daily limit of two chinook are also in place.

Chinook catch in the AABM recreational fishery is estimated through several catch monitoring programs, including a creel survey, a logbook program and DFO's electronic survey information (iREC). The creel survey continues to be the most utilized catch monitoring program in this area particularly because it collects effort (number of boat trips), and catch per unit effort data. Catch for any given species within a defined time-area stratum is estimated by multiplying effort estimates by CPUE. Total effort is estimated through vessel counts, gathered via aerial or on-water boat surveys of the fishing area. CPUE is estimated from interviews with anglers at specific landing sites and from trip logbooks and manifests submitted by lodges and guides through a voluntary monitoring program. Logbook effort is removed from effort estimates where there is overlap. Data regarding the daily activity profile of the fishery, fishing locations, and the proportion of guided versus un-guided effort are also gathered from angler interviews.

The total chinook catch in the 2015 WCVI AABM recreational fishery was estimated to be 48,775, which is down 25% from the 5 year average of 64,500. The total chinook released in the 2015 WCVI AABM fishery was estimated to be 28,330, which is down 50% from the 5 year average of 55,500. Effort in the AABM area for 2015 was 30,691 boat trips.

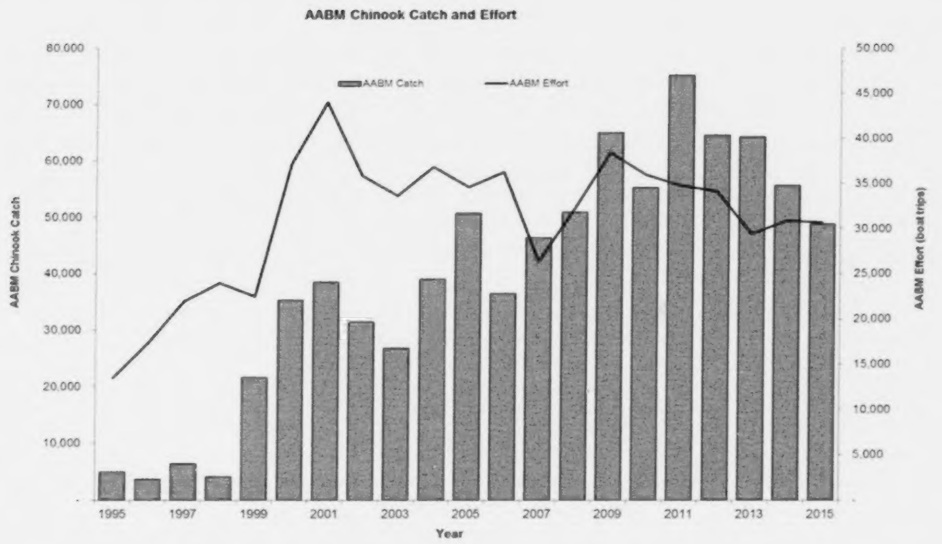

Figure 41. - Preliminary WCVI Chinook AABM Catch and Effort, 1995-2015

Commercial

Commercial Harvest

The WCVI AABM commercial TAC was set at 58,137; the commercial TAC was apportioned with 87.5% to Area G Troll and 12.5% to the T'aaq-wiihak First Nations demonstration fishery. The Area G Troll TAC was 50,870 chinook. In early September, the expected recreational catch was reduced by 4,000 to 56,000 based on preliminary creel survey results through August. This increased the Area G TAC by 3500 to 54,370; the T'aaq-wiihak allocation was increased by 500 chinook. The total estimated Area G troll catch was 54,338 chinook.

For the 2014/2015 chinook year (October 2014 to September 2015), fisheries continued to be shaped by conservation concerns for the following domestic stocks: natural WCVI, Lower Strait of Georgia (LGS), and Fraser River Spring 42, Spring 52, Summer 52 chinook and Interior Fraser River coho.

Area G Troll Summary

The Area G Troll annual management plan is designed to maintain exploitation rates on stocks of concern within established limits, by the use of fishing time and area closures in conjunction with fishing effort limits. The management plan distributes catch and effort throughout the fishing year.

The management plan is subject to change as required to address specific conservation concerns as they arise. For the 2015 fishing season the following changes to annual fishing plan were implemented:

Conservation measures introduced in the Area G troll fishery in 2011-12, to address low returns of Fraser River Spring 42, Spring 52, and Summer 52 chinook were implemented again in the 2014-15 season. For Area G troll that meant there was no June fishery and the July fisheries were delayed until the third week of July.

To avoid exceeding the overall WCVI AABM TAC, 20% of the Area G TAC was allocated to September fisheries. If preliminary AABM catch estimates to August 31 indicate the overall WCVI AABM TAC may be exceeded, the Area G TAC set aside for September would be used to assist Canada with staying within its overall WCVI chinook TAC.

Retention of all coho salmon by-catch was permitted in all openings between September 15 and December 31.

Area G Troll Fishing Periods

October to March period:

During the period from October 1 to March 15, a harvest level of approximately 20% of the Area G annual TAC was recommended, based on the PST chinook model calibration and assigned harvest levels for the outer WCVI area.

March 16 to April 18 period:

A full time-area closure was maintained from March 16 to April 18 annually to avoid interception of Fraser River Spring 42 and Fraser River Spring & Summer 52 chinook.

Late April/ mid-June period:

During the period from April 19 to June 15, a harvest of approximately 40% of the Area G annual TAC was recommended, based on the PST chinook model calibration and assigned harvest levels for the outer WCVI area. In addition, total effort (boat-days) was limited to recent year averages, and areas of southwest Vancouver Island were closed until May 7 (partial openings from May 2 to 7), in order to avoid interception of Fraser River Spring 42, Spring 52, and Summer 52 chinook.

June 16 to July 23 period:

A full time-area closure was maintained from June 15 to July 23 in Management Areas 125 to 127, and from June 16 to July 31 in Management Areas 123 to 124, to avoid interception of Fraser River Spring 42, Spring 52, and Summer 52 chinook.

July 24 through early August:

During this period, a harvest of approximately 20% of the Area G annual TAC was recommended, based on the PST chinook model calibration and assigned harvest levels for the outer WCVI area. In addition, the fishery was managed to minimize mortality on wild coho through: a) a maximum interception of coho; and b) the mandatory use of large (minimum 6") plugs. As well, the fishery was managed to minimize mortality of WCVI origin chinook through the use of time-area closures of near shore areas ("Chinook Conservation Corridor"), where WCVI chinook stocks are prevalent.

September period:

During the September period, a harvest of approximately 20% of the Area G annual TAC was recommended based on the PST chinook model calibration and assigned harvest levels for the outer WCVI area. The Area G harvest level in September has the potential to increase if there is available remaining WCVI AABM TAC after accounting for First Nation FSC and recreational fisheries. However, if First Nations or the recreational sectors catches are larger than projected, the available commercial TAC is reduced. During harvest opportunities between September 15 and December 31 retention of coho by-catch was permitted.

For all troll fisheries, selective fishing practices were mandatory, including single barbless hooks and revival tanks for resuscitating non-retention species prior to release.

Since 1999, a major objective for the management of the WCVI troll fishery has been to distribute the catch throughout the fall-winter-spring-summer periods. This objective was continued in 2014/2015.
The late July and August plug fisheries were monitored to determine encounter rates of other species and estimate numbers of released chinook. Biological sampling was conducted for size distributions, and stock compositions (Coded Wire Tags, DNA and otolith samples).

Table 30. - Post-Season Preliminary Monthly Catch Estimates for 2009/10 to 2014/15 WCVI AABM Chinook Area G Troll Fisheries

	2014/2015	**2013/2014**	**2012/2013**	**2011/2012**	**2010/2011**	**2009/2010**
October	213	2,358	3,344	0	0	0
November	56	28	230	57	0	0
December	0	25	312	188	0	0
January	186	49	1,018	129	0	0
February	612	586	358	542	1,849	0
March	731	1,422	501	243	875	0
April	3,841	13,345	1,374	10,493	8,670	8,553
May	27,405	40,336	25,737	22,334	41,239	31,296
June	0	0	0	0	34,394	23,652
July	0	26,494*	0	0	15,619*	0
August	13,953*	10,002*	0	4,280*	21,284*	11,642*
September	7,341	15,360	2,519	17,264	0	3,980
Total	**54,338**	**110,005**	**35,393**	**55,530**	**123,930**	**79,123**

*Plug fishery.

First Nation Commercial Harvest

T'aaq-wiihak Demonstration Fishery

In addition to fishing opportunities for FSC purposes, DFO provided commercial fishing opportunities to five Nuu-chah-nulth First Nations located on the West Coast of Vancouver Island - Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht – that have aboriginal rights to fish for any species of fish within their Fishing Territories and to sell that fish, with the exception of geoduck.

In 2015 the Department authorized an AABM chinook salmon demonstration fishery for the T'aaq-wiihak Nations with an initial TAC of 7,267 pieces. In early September, the expected recreational catch was reduced by 4,000 to 56,000 based on preliminary creel survey results through August. This increased the T'aaq-wiihak TAC by 500 to 7,767 based on their share of the commercial AABM TAC (12.5%). The fishery was carried out in portions of Management Areas 24, 25, 26, 124, 125 and 126 on the west coast of Vancouver Island discontinuously between July 27 and September 30, 2014. The total commercial catch sold during this fishery was estimated at 6,234 chinook.

The fishery was monitored by T'aaq-wiihak fishery monitors, independent observers and DFO staff. Biological samples for DNA, and heads from salmon indicating presence of a coded wire tag, were collected by J.O. Thomas and Associates, a company which provides independent, certified verification services.

Southern B.C. Chinook Individual Stock-Based Management (ISBM)

Objectives and Overview

In addition to the PST regime, Canada implemented management actions as required to ensure conservation of Canadian origin chinook and to meet domestic allocation requirements. These chinook fisheries were managed to harvest rates on an individual stock basis (ISBM).

Measures were taken in 2015 in First Nations Food Social and Ceremonial (FSC), recreational and commercial chinook fisheries to protect WCVI, LGS, Fraser River Spring 42, Spring 52, and Summer 52 chinook stocks. FSC management actions included time and area closures and reduced fishing times. Recreational measures included barbless hooks, time/area closures, size restrictions and mark selective fisheries. Commercial measures included barbless hooks, time and area closures, gear restrictions, mandatory use of revival tanks, daily catch reporting, mandatory logbooks and non-retention provisions for most fisheries. Post-release mortality information for chinook included in ISBM management was determined from studies conducted in 2000-2001.

Specific management actions were taken to protect WCVI origin chinook in Canadian ocean fisheries (not including enhanced terminal areas), the harvest of which was restricted to an exploitation rate of 10%. Most Southern B.C. commercial fisheries were regulated so that impact on WCVI wild chinook stocks was minimized, with the exception of terminal recreational, commercial and First Nations FSC fisheries where local abundance permitted.

LGS chinook stocks are improving from historic lows seen in 2009 and are rebuilding slowly. Significant management measures in recreational and commercial fisheries continued to be in place throughout 2015 to protect these stocks. Some LGS chinook stocks are seeing a gradual increase in terminal returns, particularly in the Cowichan River, which is encouraging; however, their productivity and Salmon Outlook category remains low.

Fraser River Spring 42, Spring 52, and Summer 52 chinook stocks had specific management measures in place to reduce exploitation in FSC, recreational and commercial fisheries. FSC management actions in the Fraser River included time and area closures, and reduced fishing times. Recreational fisheries in Juan de Fuca Strait, the lower Strait of Georgia and the approach waters of the Fraser River had specific time, area, size and mark selective restrictions designed to minimize the amount of exploitation on these chinook stocks. Fraser River tidal and non-tidal recreational fisheries had delayed starting dates, implemented to protect Fraser River Spring 42, Spring 52, and Summer 52 chinook stocks. In addition, due to extreme environmental conditions in 2015, the chinook directed recreational fisheries in the approach waters to and in the Fraser River were even further delayed to late July and early August. Commercial troll fisheries on the WCVI were also managed with time and area closures in 2015 for Fraser River Spring 42, Spring 52, and Summer 52 chinook stocks.

In 2015, recreational fisheries in freshwater areas were also closed for parts of the summer in many parts of Southern B.C. due to high water temperatures.

ISBM chinook catch and release information from all fisheries can be found in Table 55.

Stock Status

West Coast Vancouver Island Chinook

Wild WCVI chinook are a stock of concern. While stocks are low and stable, they are below target and have not rebuilt from low abundances that resulted from a decline in productivity observed during the early to mid-

1990s. Of particular concern are those stocks that originate from the SWVI area conservation unit (i.e. Clayoquot Sound).

Hatchery production supports terminal fisheries directed at surplus production with extensive management measures in place to reduce impacts on wild origin stocks. For WCVI hatchery stocks, the terminal return is defined as total catch (First Nation FSC, recreational and commercial) in the near approach areas of the hatchery plus escapement (brood collection plus natural spawners). In these hatchery approach areas, catch is dominated by the hatchery stock (e.g. >95%), therefore, higher exploitation rates are permitted than in times and areas dominated by naturally produced WCVI chinook stocks.

Johnstone Strait/Mainland Inlet Chinook

Currently only three systems are monitored consistently in Areas 12 and 13. The Nimpkish River is assessed using standardized swim surveys and stream walks by hatchery staff. An intensive mark-recapture program is carried out by Quinsam Hatchery to estimate escapement on the Campbell/Quinsam system. A mark-recapture program has been in development over the past few years on the Phillips River, with the plan to eventually establish it as a mainland chinook indicator. Other systems are covered using intermittent visual surveys.

Nimpkish River

In 2015, the coverage of the chinook timing was greatly impacted by flow conditions during mid to late October, which made coverage of the watershed difficult. Assessment coverage up until that time period and during the early portions of November will be used to determine escapement to the system for 2015. Hatchery staff were very successful in collecting their full brood stock target of 77 females and 77 males for enhancement. The preliminary escapement estimate of just over 1,300 individuals is similar to 2014 and is a continued improvement over the low but stable returns seen prior to 2012, which averaged around 600 adults.

Campbell/Quinsam System

The Campbell/Quinsam, a long-term chinook indicator, has been assessed by carcass mark-recapture since 1984. Preliminary results for the 2015 program have the combined system chinook estimate at approximately 4,000 adults; an increase over the 2014 return of approximately 2,700. Estimate precision improved on the Campbell but declined on the Quinsam (high level of bear activity and damage to carcasses).

The Quinsam Hatchery achieved their chinook brood stock target for 2015.

Phillips River

Preliminary results from the mark-recapture program on the Phillips River indicate the chinook escapement is in the range of 2,100 adults, a continuation of the strong trend over the past few years. River conditions were stable for most of the program, but the dead pitch was impacted by a reduction in carcass condition related to increased bear activity.

The local hatchery was again successful in meeting its brood target and plan to release 150,000 coded wire tagged chinook smolts next spring to contribute to the assessment program.

Strait of Georgia Chinook

Fall:

Total returns to Strait of Georgia streams north of Nanaimo, virtually all of which are enhanced, have been stable for the last fifteen years. In general, 2015 chinook escapements were similar to or lower than 2014 in this area. Most systems had a decrease in abundance with the exception of Qualicum River which was similar to previous years, and Puntledge Falls which increased in spawner abundance.

In the southern Strait of Georgia, total returns have been on a decreasing trend over the last 25 years. Specifically, the Nanaimo River chinook abundance has been generally stable since 1995 and the Cowichan River chinook abundance has decreased since the very high escapements in the 1990s to the low in 2009. Since that year the spawner abundances have slightly increased to approximately half of the long term average. In 2015, the Nanaimo River chinook abundance for both Summers and Fall decreased over the previous year. Goldstream and Chemainus River chinook continue to have very low numbers of spawners.

Cowichan River chinook (a wild chinook indicator stock) has been in decline since 1995-1996 and culminated in a low total adult return to river of 1,260 in 2009 with subsequent improvements. This population continues to be a stock of concern. Exploitation rates on Cowichan chinook were historically high (averaging 80-90%), declined to a low of 34% on the 1995 brood year, and steadily increased to 75% on the 2000 and 2001 brood years. Various harvest restrictions have been put into effect over the last 20 years to reduce exploitation on Strait of Georgia chinook. Additional conservation measures were introduced in 2005 to reduce the harvest of Cowichan chinook by the Strait of Georgia recreational and WCVI troll fisheries. First Nations have substantially reduced harvests of chinook in the Cowichan River in recent years. The declining trends since 1990 in various southern Strait of Georgia Rivers are attributed to high exploitation rates, a decline in marine survival, and habitat issues.

In 2015, chinook escapement to Cowichan River was similar to the previous year. The preliminary analysis from the enumeration project is an estimate of 7,000 spawners (all ages) and 421 brood stock taken for the Cowichan River Hatchery. Approximately 75% of the spawners are age 3+ ('adults') and the other 25% are age 2 ('jacks' and 'jills'). Water levels were low until mid-September although upstream migration occurred during storm events and higher flows motivated the chinook to migrate upstream to the spawning areas. The number of chinook caught in local First Nation FSC fisheries has not yet been reported.

On the mainland side of the northern Strait of Georgia, Sliammon and Lang hatcheries continue to have variable returns, however in the last five years the returns to Lang Creek have been stronger than in previous years. There are a few very small, wild populations remaining in the Theodosia and Skwakwa rivers, and those rivers entering Jervis Inlet, where assessment data are poor or not available. Historically, a large proportion of the chinook stock aggregate originating from rivers north of Nanaimo migrate into central and northern B.C. and Alaska. Exploitation rates on this stock aggregate have gradually been reduced over the last 15 years, thus the stable trend in annual returns to rivers over this period suggests a reduction in marine survival.

Spring/Summer:

The Puntledge, Nanaimo and more recently the Cowichan system have identified early runs of chinook in the Strait of Georgia. Cowichan Summer run chinook were monitored this year and preliminary results show an abundance of 200-300 individuals. These were shown to move upstream into the Cowichan Lake through the summer, dropping downstream in August and September to spawn. Efforts to recover Puntledge summers to viable levels have resulted in improved returns to the river since 1999. The 2006 and 2007 natural spawning escapements ranged from 200 - 500 adults (not including brood capture), which is down from the record high in 2005 of approximately 2,500 adults, but is substantially higher than escapements recorded in the previous decades. The preliminary estimate for 2015 escapement to Puntledge is approximately 603 adults which is a reversal of the increasing abundance trend over the past three years. Monitoring of Nanaimo spring and summer chinook escapement has occurred less frequently. This year's escapement of Nanaimo summers is estimated to be about 350 chinook adults, which is below average for the last 15 years.

Fraser River and Area Chinook

Fraser River Chinook

Preliminary indications are that the Spring 52 aggregate spawner abundance is greater than the 2010 parent brood. Concerns continue to exist with respect to the overall spawning abundance which will likely be similar to levels observed in the base period.

Returns to the Spring 42 aggregate again improved considerably over parent brood levels in 2011, however the aggregate total escapement is at similar levels to those observed during the base period.

Yearling (stream-type) summer chinook (Summer 52 aggregate) returns were mostly better than the parental escapements in 2010, and marginally above those observed in the base period.

In 2015, the escapement of the Summer 41 aggregate was strong and all stocks exceeded brood escapement levels; on average, the MU achieved 135% of the parental escapement observed in 2010.

Annual lower Fraser River fall-run chinook stock group escapements are, on average, large (>100,000). The major contributor and principal focus of assessment of this stock group is chinook returning to the Harrison River, and Harrison River transplants to the Chilliwack River. Forecasts for this stock group in 2015 were below desired escapement ranges. For both the Harrison and Chilliwack rivers, the field study portions of the escapement assessments are just concluding; and data entry and analyses have not started. Field estimates for Harrison indicate escapements are likely to be about 90,000 adults (33,000 was forecast); for the Chilliwack, the preliminary field estimate of escapement is 26,700 (39,000 was forecast). Values are preliminary and will be updated in coming months.

Howe Sound/Squamish River

No information is available at this time.

Burrard Inlet

No information is available at this time.

Boundary Bay

No information is available at this time.

Fisheries

First Nations Food Social and Ceremonial and Treaty Fisheries

WCVI FSC Fisheries

A total of 1,051 pieces were harvested by rod and reel and as by catch during other salmon fisheries. Catch reports for Maa-nulth domestic harvest indicate a combined ISBM FSC chinook harvest of 434 pieces. NTC First Nations ISBM catch reported to date is 534 pieces.

The total WCVI FSC chinook catch to date is 2,019 pieces.

Johnstone Strait FSC Fisheries

Data are still being compiled on various First Nations catches in Johnstone Strait; however, preliminary catch is estimated at 261 chinook.

Strait of Georgia FSC Fisheries

Data are still being compiled on various First Nations catches in the Strait of Georgia; however, preliminary catch is estimated at 4 chinook.

Lower Fraser Area FSC Fisheries (Mouth to Sawmill Creek)

FSC fisheries took place in the Fraser River between the mouth and Sawmill Creek from April through November 2015. The total chinook harvested in the lower Fraser River (below Sawmill Creek) was 20,373.

B.C. Interior (Fraser River upstream of Sawmill Creek and Thompson watershed)

FSC fisheries took place on the Fraser River upstream of Sawmill Creek from May through to November 2015. Chinook harvest and release estimates were 3,339 and 90, respectively.

Recreational Fisheries

West Coast Vancouver Island

WCVI recreational ISBM fisheries are managed to fall within Canada's 10% exploitation rate on WCVI wild chinook. To help achieve this objective management measures are put in place along the coast in areas that tagging studies have shown to be the main WCVI chinook migratory routes. This area is known as the Chinook Conservation Corridor, and is an area one nautical mile seaward of the surf line, extending from Areas 123 to 127. The majority of WCVI chinook >77 cm that are caught in the recreational fishery are mature females, and starting July 15 in those waters north of Estevan Point and August 1 for those waters south of Estevan Point, the retention of chinook >77 cm is not permitted. In terminal areas, in proximity to production hatcheries (Nitinat, Barkley Sound, Nootka Sound) where hatchery chinook make up a significant part of the catch, these restrictions are typically reduced and the retention of one chinook >77 cm is permitted. These terminal restrictions depend on abundance and can be more restrictive if local chinook abundance forecasts are low. Barkley Sound is normally included in the measures outlined above for areas with production hatcheries as the Robertson Creek Hatchery is located in that area. However, in 2015, with a high return of 3 year olds and a low return of 4 and 5 year old chinook, Area 23 was included in the chinook corridor restrictions. These measures expire in NWVI after September 30 and in SWVI after October 15 when most of these chinook are considered to have migrated through the corridor. Other management measures in effect to reduce recreational impacts on chinook include barbless hooks, a minimum size limit, daily limits and annual limits.

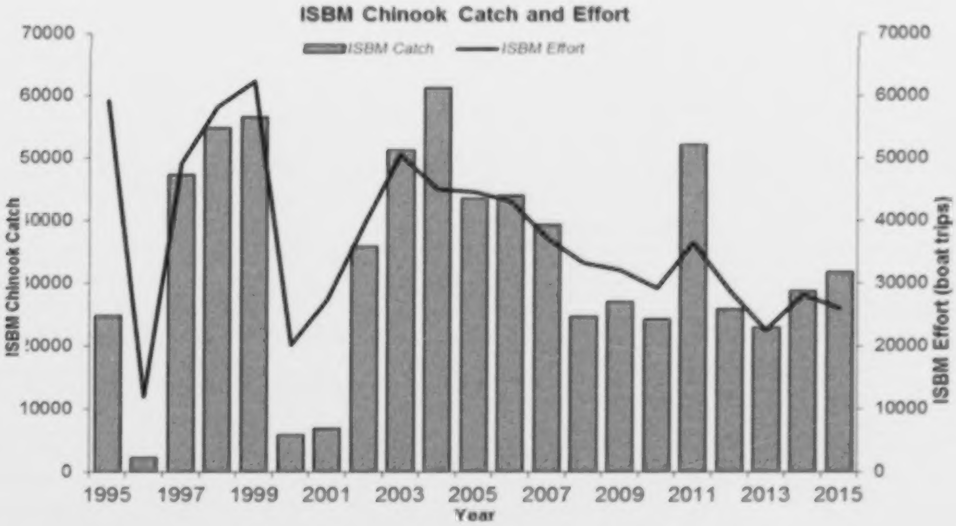

Figure 42. - Recreational WCVI Chinook ISBM Catch and Effort, 1995-2015

Inside Areas: Strait of Georgia, Johnstone Strait, and Juan de Fuca Strait

2015 recreational fisheries in these areas were designed to minimize impact on returning Fraser River Spring 42, Spring 52, and Summer 52 chinook. Management measures put in place to protect these stocks included a mark selective fishery (Victoria area) and size limits in specific areas/times.

In those waters near Victoria between Cadboro Point and Sheringham Point (Subareas 19-1 to 19-4 and 20-5), retention regulations were adjusted from March 1 to June 12 where anglers were permitted to retain two chinook per day either wild or hatchery marked between 45 cm and 67 cm or hatchery marked only chinook over 67 cm in length. From June 13 to July 17, the daily limit remained at two wild chinook of which one could be greater than 67 cm.

The Strait of Georgia "chinook corridor" extending from Subareas 18-1 to 18-6, 18-9, 18-11, 19-5 and a portion of 29-4 and 29-5 that lies south from a point on the east side of Valdes Island and extending 57 degrees true for 5 nautical miles remained in place in 2015. In this corridor the daily limit was two chinook of which only one could be over 67 cm from May 4 to July 17. The minimum size limit is 62 cm.

Drought like conditions in the summer of 2015 elevated the concern for Lower Strait of Georgia chinook, including Cowichan River chinook due to reduced river flows and high river temperatures. Salmon non-retention measures were put into effect in Subareas 17-5 to 17-7, 17-9, 18-6 to 18-8 and 19-7 to 19-12. These areas had chinook non-retention measures in effect from August 1 through October 15. As river conditions improved in the fall of 2015 these areas reverted back to chinook non-retention areas on October 15.

For the Johnstone Strait and Strait of Georgia areas chinook management measures also included an annual limit of 15 chinook, a daily limit of two chinook and a minimum size limit of 62 cm. For the Canadian portion of Juan de Fuca Strait south of Cadboro Point, regulations included an annual limit of 20 chinook, a daily limit of two chinook and a minimum size limit of 45 cm.

In 2015 marine recreational fisheries were monitored by creel surveys in three main areas 1) Juan de Fuca including Victoria (south of Cadboro Point) and Juan de Fuca Strait through Subareas 20-1; 2) Portions of the Strait of Georgia including Areas 14 through 18, that portion of Area 19 north of Cadboro Point, Areas

28 and 29; and 3) Johnstone Strait including Areas 11 to 13. Monitoring of the Strait of Georgia recreational fishery took place from June-October (not all areas were surveyed every month), and Juan de Fuca Strait recreational fishery (February to October) has been fairly consistent from year to year using an access point (landing site) survey for collecting catch, CPUE, and biological information combined with an aerial survey for effort counts. In addition, logbook programs, directed at estimating the recreational catch by fishing guides during guided trips, were conducted in the Campbell River and Victoria Areas in 2015. The Johnstone Strait creel survey commenced in Area 13 in May and continued through until the end of September, and from June through August included Areas 11 and 12.

Effort, catch and release information from marine fisheries are summarized in Table 44.

Region 1: Vancouver Island Tributaries

Freshwater restrictions were in effect in most tributaries on Vancouver Island due to drought like conditions in 2015. Rivers on the southern half of Vancouver Island (Regions 1-1 to 1-6) were closed to angling on July 8 and the remaining portions of Region 1 (Regions 7-13) closed to angling August 1. Region 1 rivers were re-opened on September 11 due to improved water flows and near-normal temperatures. The Qualicum Nitinat, Somass and Conuma Rivers provided some recreational opportunities to harvest enhanced chinook stocks.

Qualicum River

Qualicum River opened for chinook on August 1 for four per day less than 62 cm. On October 16 the regulation changed to four chinook per day of which 2 could be greater than 62 cm. The Qualicum River was not monitored by creel survey during 2015.

Somass/Stamp

During 2015 there was a non-tidal opening on the Somass/Stamp River (Area 23) with chinook retention. Due to a low forecast of 4 and 5 year old Robertson Creek chinook protective measures were required on the Somass and Stamp rivers to protect female chinook salmon Including: increased closed areas, size limit and reduced quotas. The drought conditions experienced during the summer also delayed the August 25th opening to September 1, 2015. The fishery remained open until December 31, 2015. The daily limit was one chinook salmon which must be less than 77 cm. The Somass/Stamp Rivers were not monitored by creel survey during 2015.

Nitinat

During 2015 there was a planned non-tidal opening for the Nitinat River (Area 22) from August 25, 2015 to September 30, 2015. The drought conditions experienced during the summer delayed the August 25th opening until environmental conditions improved allowing fish migration on September 4, 2015. The fishery remained open until October 1, 2015. The daily limit was two with only one greater than 77 cm. The salmon fishery was closed for retention of chinook from October 1 until October 14 to protect chinook salmon during the peak spawning period. The salmon fishery re-opened from October 15 until December 31 with non-retention of chinook salmon. The area above Parker Creek was closed to fishing. The Nitinat River was not monitored by creel survey during 2015.

Conuma

Angling for chinook in the non-tidal portion of the Conuma River typically opens on August 25th but was delayed, along with many other streams in Region 1 until September 11th due to low water levels and high water temperatures. The daily limit was two with only one greater than 77 cm. The Conuma River was not monitored by creel survey during 2015. At the recommendation of the Area 25 Roundtable, a finfish recreational closure was implemented on August 29th in Moucha Bay to protect holding chinook waiting for conditions in the Conuma River to improve before migrating to the spawning grounds. This closure was lifted on September 11th.

Fraser River and Tributaries

Fraser River Spring 42, Spring 52, and Summer 52 chinook stocks required additional management measures again in 2015 due to continued concerns about stock status.

In Subareas 29-6, 29-7, 29-9 and 29-10, the 2015 fishing regulations were as follows:

- May 1 to July 12, no fishing for chinook salmon.
- July 13 to July 31, daily limit for chinook salmon was zero. This management measures were put in place due to adverse environmental conditions and to reduce potential impacts on co-migrating sockeye.
- August 1 to August 14, daily limit was two chinook (wild or hatchery marked) with a minimum length of 62 cm.
- August 15 to August 28, no fishing for salmon. This management measure was in place due to high water temperatures and concerns with potential impacts to co-migrating sockeye salmon.
- August 29 to December 31, the daily limit was two chinook (wild or hatchery marked) with a minimum length of 62 cm.

Tidal Fraser and Region 2 Fraser River:

In the tidal waters of the Fraser River the following regulations were in place for 2015:

- January 1 to July 31, no fishing for salmon.
- August 1 to August 14, the daily limit was four chinook per day with only one over 50 cm allowed to be retained.
- August 15 to August 28, no fishing for salmon. This management measure was in place due to high water temperatures and concerns with potential impacts to co-migrating sockeye salmon.
- August 29 to December 31 the daily limit for wild or hatchery marked chinook salmon was four with only one over 62 cm allowed to be retained.

In the non-tidal waters (Region 2) of the Fraser River the following regulations were in place for 2015:

- January 1 to August 2, no fishing for salmon.
- August 3 to August 14, the daily limit was four chinook per day with only one over 50 cm allowed to be retained.
- August 15 to August 28, no fishing for salmon. This management measure was in place due to high water temperatures and concerns with potential impacts to co-migrating sockeye salmon.

- August 29 to December 31, the daily limit for wild or hatchery marked chinook salmon was four with only one over 62 cm allowed to be retained.

Fraser River Tributaries:

Due to adverse environmental conditions, an in-season angling closure was implemented in most rivers/streams from July 22 to September 13. There were several tributaries to the Fraser River in which chinook retention was permitted outside of the previously stated closed period. These included:

- Alouette River: daily limit of one chinook from July 1 to December 31;

- Chehalis River: daily limit of four with only one over 50 cm from June 1 until August 10 and a daily limit of four chinook with only one over 62 cm from September 16 until December 31; Chilliwack/Vedder River: daily limit of four with only one over 62 cm from July 1 until December 31; Coquitlam River: daily limit of one chinook from July 1 to December 31;

- Harrison River, there was no chinook fishery on the Harrison River in 2015 due to a low forecast of terminal abundance.

Tributaries to the Fraser River above Sawmill Creek in which chinook retention was authorized included:

Region 3 - Fraser River

- Fraser River: No fishing for salmon from January 1 until July 15. From July 16 to September 16, daily limit of four chinook per day, none over 50 cm, except for the following two exemptions:

1) Bridge River downstream of the Road 40 Bridge and the Fraser River from the Bridge River to the B.C. Railway Bridge north of Lillooet, daily limit of one chinook during the following time frames and from 06:00 to 21:00 hours daily:

- Tuesday, June 16 to Thursday, June 18;

- Sunday, June 21 to Thursday, June 25; and

- Sunday, June 28 to Thursday, July 2.

2) Closed from July 22 to December 31 to all salmon fishing due to concerns related to high water temperatures.

Region 3 - Fraser River Tributaries

- Clearwater and North Thompson: July 16 to July 21, catch and release of chinook only. July 22 to August 6, no fishing for salmon. August 7 to August 21, daily limit of one chinook with a monthly limit of two chinook from the two rivers combined.

- Kamloops Lake and the Thompson River from Kamloops Lake downstream to Goldpan: August 28 to September 22, daily limit of four chinook, only one over 50 cm.

- Thompson River: Goldpan to the Fraser, August 29 to September 22, daily limit of four chinook, none over 50 cm.

- South Thompson River: August 22 to September 22, daily limit of four chinook, only two greater than 50 cm. There is a monthly quota of six chinook from the South Thompson River.

Region 5A

- Cariboo River: July 25 to August 16, daily limit of one chinook between 30 cm and 77 cm.

- Chilko River: July 25 to August 16, daily limit of one chinook between 30 cm and 77 cm.

- Quesnel River: July 15 to September 1, daily limit of one chinook between 30 cm and 77 cm.

Region 7

- Bowron River: July 15 to August 15, daily limit of one chinook between 30 cm and 77 cm.

- Nechako River: August 15 to August 27, daily limit of one chinook between 30 cm and 77 cm.

Region 8

Note: there is a monthly limit of four chinook in Region 8.

- Mabel Lake and Lower Shuswap River: September 1 to September 13, daily limit of four chinook per day, only two greater than 50 cm. The open area in Mabel Lake was smaller than usual this year due to an area that remained closed off the mouth of Middle Shuswap River due to concern for co-migrating Middle Shuswap chinook.

- Middle Shuswap River: did not open in 2015 due to high water temperature concerns.

Table 31. - Preliminary Catch and Effort Estimates for Southern B.C. Inside Recreational ISBM Fisheries in 2015.

Fishing Area	Survey Period	Chinook Kept	Chinook Released	Effort (Boat Trips)
Strait of Georgia	Jun - Oct	51,483	36,655	72,689
Johnstone Strait	Jun - Aug	12,127	9,138	14,273
Juan de Fuca Strait	Feb- Oct	30,558	20,913	52,631
WCVI Inshore	Jun-Sep	31,753	14,877	26,038
Fraser River	Jul - Oct	13,186	1,702	n/a
TOTAL		**139,107**	**83,285**	**165,631**

Commercial

Commercial Harvest

In 2015 there were commercial fisheries in Barkley Sound and Nootka Sound which targeted ISBM chinook.

Area B Seine

No seine fisheries occurred for WCVI ISBM chinook in 2015.

Area D Gill Net

In 2015, due to the expected abundant return of 3 year old Robertson Creek chinook commercial gill net fisheries were approved in early September. These fisheries were designed to target mainly male chinook 77 cm or less and protect larger egg bearing females. The fisheries occurred in Subarea 23-1, upper Alberni Inlet, targeting chinook returns to Robertson Creek Hatchery. The fisheries occurred on September 10, 11, 17 and 18 for 12 hours each opening. The fishery was not successful, with a total catch of 438 pieces. It was an open fleet fishery however; the largest number of vessels participating in one opening was 16 vessels.

In 2015, gill net fisheries occurred in Tlupana Inlet targeting chinook returns to the Conuma River hatchery. There were both limited- effort and full fleet openings from August 9 to September 1 that occurred only at night. The total estimated catch was 9,615 chinook

Area E Gill Net

No Area E gill net fisheries occurred for ISBM chinook in 2015.

First Nation Commercial Harvest

West Coast Vancouver Island Economic Opportunity

In 2015 an agreement was reached which provided First Nations with an economic opportunity fishery. There was an opportunity for several limited commercial openings during daylight hours in 2015. These fisheries were combined coho and chinook fisheries using small mesh nets allowing fishers to target an abundance of small male chinook salmon. These fisheries were very successful for chinook and the total catch was 6,692 pieces.

The Department authorized an ISBM chinook salmon demonstration fishery in Area 25 for the T'aaq-wiihak Nations in 2015. This fishery targeted both the Conuma River and Burman River enhanced chinook returns using troll and gill net gear. Fishery openings occurred discontinuously from July 18 to September 1. A total of 54 chinook from the Conuma targeted fishery and 978 chinook from the Burman targeted fishery were sold.

Fraser River Economic Opportunity and Inland Demonstration Fisheries

Lower Fraser Area

In 2015, no sockeye-directed economic opportunity or demonstration fisheries took place in the Lower Fraser Area; therefore there was no incidental impact on chinook from these fisheries.

In mid-September limited economic opportunity/ demonstration fisheries to access available pink salmon TAC were initiated. In mid-October through early November limited economic opportunity/ demonstration fisheries to access available chum salmon TAC were initiated. Although the retention of chinook salmon was not authorized during these economic opportunity demonstration / fisheries, there was some by-catch retention reported. The total chinook harvested in pink and chum economic opportunity/demonstration fisheries was 22 with 1,481 released.

B.C.I

Economic opportunity and inland demonstration fisheries took place in the Fraser River in 2015, harvesting ISBM chinook in both the upper and lower reaches of the Fraser River.

An inland commercial fishing enterprise (CFE) operated by Riverfresh (Secwepemc Fisheries Commission), received an allocation for chinook in the B.C. Interior. They operated an 8 inch set gill net fishery from September 10 to September 22 on Kamloops Lake targeting South Thompson 41 chinook and Fraser pinks. Riverfresh was allocated 3,100 chinook and 9,200 Fraser pinks for the 2015 season. A total of 2,493 chinook were harvested.

Excess Salmon to Spawning Requirements (ESSR) Fisheries

WCVI ESSR Fisheries

First Nations were issued a joint Excess Salmon to Spawning Requirements (ESSR) licence for chinook at the Robertson Creek Hatchery facility. The total sold was 30,724 chinook (this total includes 1,615 jacks). An ESSR licence was issued for chinook at Nitinat Lake and the Nitinat Hatchery. The catch was 857 chinook. The total catch for both ESSR fisheries was 31,581 pieces.

Strait of Georgia ESSR Fisheries

ESSR harvest at the Big Qualicum hatchery included catch of 1,209 chinook.

Capilano Hatchery ESSR Fisheries

There were ESSR fisheries at the Capilano hatchery in 2015 that included chinook salmon. The total harvest of chinook salmon was 786 pieces (total includes 382 jacks).

Fraser River ESSR Fisheries

There were ESSR fisheries at the Chilliwack hatchery in 2015 that included chinook salmon. The total harvest of chinook salmon was 7,966 pieces (total includes 1,254 jacks).

There were ESSR fisheries at the Inch Creek and Chehalis hatcheries in 2015; however, no harvests of chinook salmon took place.

Fraser River Sockeye

Objectives and Overview

The 2015 Fraser sockeye forecast had an 80% prediction interval of 2.36M – 23.58M. From this distribution, the Fraser River Panel (FRP) adopted a run size forecast of 6.76M Fraser sockeye for planning purposes based on the 50% (p50) probability level forecast for all run timing aggregates with the exception of Early Stuart sockeye where the 25% probability level (p25) was used. The majority of the total return (~69%) was expected to be from the Summer run sockeye stock grouping. Pre-season planning focused on First Nations Food, Social and Ceremonial (FSC) fisheries, and providing opportunities on Summer run sockeye for the commercial and recreational fisheries, while staying within constraints to minimize impacts on less abundant stock groups and species of concern.

Pre-season plans incorporated provisions to meet escapement objectives and meet conservation objectives for stocks of concern while considering international and domestic objectives. Significant effort was placed on developing a pre-season plan for anticipated fisheries. The pre-season plan included the following assumptions and guiding principles in no particular order:

- The Fraser River Panel operated in accordance with Chapter 4, Annex IV of the Pacific Salmon Treaty, which came into effect prior to the 2015 season;

- The U.S. share of the annual Fraser River sockeye salmon total allowable catch (TAC), harvested in the waters of Washington State was set at 16.5% of the aggregate. To the extent practicable, the Fraser River Panel shall manage the United States fishery to implement a fishing plan that concentrates harvest on the most abundant management group (or groups; in 2015 the Summer run stock grouping). It is understood that the U.S. harvest may exceed 16.5% of the TAC for one or more of the less abundant management groups despite concentrating the harvest in this manner;

- For computing TAC by stock management groupings, the Aboriginal Fishery Exemption (AFE) of 400,000 Fraser River sockeye, shall be allocated to management groups as follows: The Early Stuart sockeye exemption shall be up to 20% of the Fraser River AFE, and the remaining balance of the latter exemption shall be based on the average proportional distribution of First Nations Food, Social and Ceremonial catch for the most recent three cycles and modified annually as required to address concerns for Fraser River sockeye stocks and other species, and as otherwise agreed to by the Fraser River Panel;

- Although the capability to assess in-season run size and marine migration timing was anticipated to be good for Late run sockeye, an in-season run size estimate for Cultus Lake sockeye would not be possible due to low abundance relative to co-migrating sockeye stocks. As a result, the Cultus exploitation rate is assumed to be the same as the exploitation rate from the similarly timed Late run stocks (excluding the Birkenhead stock), caught seaward of the confluence of the Fraser and the Vedder rivers;

- The four stock aggregates identified under the Pacific Salmon Treaty Annex generally contain stocks with similar timing in the marine area. Recent trends in timing of some stocks, including Raft River and North Thompson (in the Early Summer run prior to 2012), and Harrison River (in the Late run prior to 2012) sockeye now differs substantially from the other stocks in their respective historical run timing groups. In 2015, Fisheries and Oceans Canada continued to manage these stocks as part of the Summer run aggregate to better align these stocks with other stocks of similar run timing. Escapement plans, management adjustments and harvest rules have been adjusted to account for this change;

- Canada's escapement plan specified escapement requirements that varied with run size for each of the run timing aggregates;

- The Total Allowable Mortality (TAM) cap describes the upper range of the total mortality (including management adjustments and exploitation rate). For 2015 the Early Stuart, Early Summer, and Late run sockeye would all be managed to a TAM cap of 60% while the Summer run will be managed to a TAM cap of 65%;

- At low abundances, low abundance exploitation rates (LAERs) are implemented to protect 90% of the run timing aggregate (10% LAER) while allowing for fisheries on more abundant co-migrating run timing groups and/or species. The exception is the Late run aggregate where a 20% LAER has been implemented consistent with recent years' practice. If the return of Late run sockeye was at or above the p75 forecast, consideration would be given to increasing the Late run LAER up to 30% provided recovery objectives could be met.

- In 2015, Early Stuart sockeye window closures and other fishing restrictions were planned for commercial, recreational and First Nations fisheries to protect a significant proportion (90%) of the Early Stuart return. These measures included a rolling window closure based on run timing of the Early Stuart sockeye migration through various fishery areas. An additional 1 week closure window was implemented to protect the early timed Early Summers; and

- Conservation concerns for other sockeye stocks and species continued to impact the planning of sockeye fisheries in 2015. The stocks and species of concern in 2015 were: Cultus Lake sockeye, Nimpkish River sockeye, Sakinaw Lake sockeye, Interior Fraser River coho, Fraser Spring 42 chinook, Fraser Spring and Summer 52 chinook, and Interior Fraser River steelhead.

Management Actions

Initially, Fraser River sockeye harvest opportunities were restricted for all harvest groups based on the requirement for a moving window closure to protect Early Stuart and early-timed Early Summer sockeye. During the Early Stuart window closure time period in-season assessments indicated there was limited harvest impact available designated under the LAER provisions. As the season progressed, in-season information indicated that there was Early Summer TAC and it was anticipated that Summer run TAC would be available. Some directed harvest occurred by First Nations for FSC purposes both in the marine and in-river fisheries. U.S. fisheries also occurred in this time frame. On August 11th, substantially reduced run sizes were adopted that resulted in limited TAC on Early Summers and no TAC available for Summer run. On August 14th, the run size of Late run sockeye also dropped to levels that did not result in any TAC. With both Summer and Late Run sockeye in an LAER situation, only fisheries that were selective and directed at other species could be prosecuted. Although there was no TAC for Early Stuart, Summer, or Late run sockeye identified, in Canada there was directed harvest permitted in some of the more terminal areas in the B.C. Interior for FSC fisheries where First Nations had limited access to other species and stocks.

Total Allowable Catch

The TAC for Fraser sockeye is calculated using: run size estimates, the escapement plan, management adjustments, run timing, and estimates of test fishing catches. In-season, fisheries are planned using in-season information and are not conducted based on pre-season forecasts.

In 2015, fisheries were planned in Canada targeting the stock aggregates with available TAC while minimizing impacts on stocks of concern and considering LAER caps. Other stock aggregates that could constrain fisheries were harvested incidentally to levels identified in Canada's Escapement Plan.
The table below outlines final in-season estimates of Fraser River sockeye catch in Canada and the U.S.

Table 32. - Final In-season Estimates of Fraser River Sockeye Catch in Canada & in the U.S.

Total Fraser Sockeye Caught [a]	**267,300**
Test fisheries (Panel approved)	37,900
Canadian Catch	**183,300**
Canadian First Nation FSC fisheries- Marine	39,800
Canadian First Nation FSC fisheries- Fraser	142,900
Canadian commercial fisheries (includes commercial selective & FN economic)	0
Canadian recreational fisheries	0
Canadian test fisheries (Albion)	500
United States Catch	**46,100**
U.S. non-Treaty Indian fisheries	11,000
U.S. Treaty Indian fisheries	33,100
U.S. Treaty Indian ceremonial fisheries	2,000

[a] Preliminary in-season catch as of October 6, 2015 rounded to the nearest 100 fish. Does not include non-Fraser sockeye.

The table below shows the pre-season and final in-season TAC and catch by aggregate.

Table 33. - Final In-season Estimates of Fraser River Sockeye Catch as of October 6 2015 in Canada and the U.S.

Stock	**Pre-season total TAC[a]**	**Final In-season total TAC[b]**	**Final In-season Catch[ac]**
Early Stuart	1,500	800	800
Early Summer	150,500	73,5000	44,900
Summer	2,674,000	128,400	212,200
Late	257,000	35,200	9,400
Total	**3,081,500**	**237,900**	**267,300**

a TAC includes the Canadian Aboriginal Fisheries Exemption amount of 400,000 fish.
b Includes LAER of 10% for Early Stuarts and Summers, and 20% for Lates.
c Catch up to October 6, 2015 rounded to the nearest 100 fish.
Catches includes catch from test fisheries.

Table 34 outlines the catch for each country in fisheries managed through the FRP process.

Table 34. - Final In-season Catch as of October 6, 2015.a
(See also Table 56 for most up to date catches)

		Sockeye		Pink	
		Total	**Fraser**	Total	**Fraser**
Canada		*184,800*	***183,300***	*42,000*	***29,800***
Commercial		-	-	-	-
FSC		183,900	182,800	41,400	29,300
	mrne	41,000	39,800	15,600	3,500
	LFrA	61,500	61,500	24,600	24,600
	BCI	81,400	81,400	1,200	1,200
FN Demo (BCI)		-	-	500	500
Recreational (JuFu)		300	-	-	-
Charter (Albion TF)		500	500	-	-
United States		*47,300*	***46,100***	*672,600*	***334,700***
Commercial		*45,200*	***44,100***	*650,500*	***331,400***
C&S		*2,000*	***2,000***	*22,200*	***3,400***
FRP Test Fisheries		*41,700*	***37,900***	*122,600*	***49,200***
Total		*273,800*	***267,300***	*837,200*	***413,700***

a. Preliminary in-season catch as of October 6, 2015 rounded to the nearest 100 fish. Does not include non-Fraser sockeye.

Fraser Sockeye Exploitation Rates

The table below outlines pre-season exploitation rate expectations based on the p50 forecast, pre-season MAs, 2015 Total Allowable Mortality (TAM) rules, and final in-season exploitation rate estimates based on final in-season estimates of run size and catch, along with the estimated final in-season exploitation rate after incorporating fishery induced mortalities.

Table 35. - Potential Exploitation Rates

	Pre-season Allowable ER [a]	Final In-season Allowable ER*	Final In-season ER (Actual Estimate)[b]
Early Stuart	0%	10%	2%
Early Summer	20%	20%	12%
Summer	59%	10%	14%
Late	22%	20%	6%
Cultus [c]	22%	20%	6%

[a] ER is the max allowable ER based on 2015 TAM rules, pre-season (June) pMAs, and the p50 forecast

[b] ER is based on the final adopted in-season run size and in-season catch

[c] ER is assumed to be the same as similarly timed Late-run stocks

*In 2015, the Early Stuart, Summer, and Late run sockeye were all in a low abundance ER (or LAER) situation. As noted in the IFMP, the LAER is provided to allow for limited fisheries directed on co-migrating stocks or species.

Stock Status

Pre-season Assessment

In addition to Canada's escapement plan, estimates of run size, diversion rate, run timing and assumptions about in-season environmental conditions are key inputs required to seed the pre-season Harvest Planning Model prior to observing in-season information. The main objective of the model is to identify potential fishing opportunities while attempting to meet conservation, international and domestic harvest objectives.

The 2015 sockeye run size forecasts were calculated using methods consistent with previous forecasts, which assess the performance of both long-term stock-recruit models by assuming average productivity and non-parametric models based on recent recruit per spawner data over the entire time series via jack knife analysis. The final forecast model for each stock was selected based on its ability to predict the stock's true returns over the full stock-recruitment time series. For further details, refer to the Canadian Science Advisory Secretariat (CSAS) Pacific Region Science Response: Pre-season run size forecasts for Fraser River Sockeye (Onchorhynchus nerka) and Pink (O. gorbuscha) salmon in 2015.

The pre-season run sizes adopted by the Panel were used for management purposes, until in-season updates of run size are available. For pre-season planning purposes, the FRP used the 50% probability level for all run timing groups and stocks with the exception of Early Stuart (p25). The run sizes adopted by the Panel for pre-season planning purposes and to start the 2015 fishing season were as follows: Early Stuart 16,000 (p25); Early Summer run 837,000; Summer run 4,675,000; and Late run 1,236,000, for a total of 6,778,000 Fraser sockeye. The total four year old proportion of the 2015 forecast (78% of the total four plus five year old forecast at the 50% probability level) was below average (82%). This was attributed to the exceptional escapements for a number of stocks in the 2010 brood year, which contributes five year olds to the 2015 forecast.

Diversion Rate

The pre-season forecast of Fraser sockeye migrating through Johnstone Strait was 95%. The estimate is based on the relationship between the mean daily sea surface temperature measured at the Kains Island (Quatsino) lighthouse in May and June and the estimated post-season Northern Diversion Rate for 1977-2014.

For the purposes of pre-season planning, it is assumed that Northern Diversion increases over the course of the season. In addition, Early Stuart and Harrison sockeye are assumed to migrate predominately through the Juan de Fuca approach, regardless of migration timing or the overall diversion rate for Fraser Sockeye.

Timing Forecasts

Pre-season forecasts were provided by Canada for the 50% marine arrival times for the two sockeye salmon stocks (Early Stuart and Chilko River). The run timings used for pre-season planning purposes were derived from regressions based on Early Stuart forecast run timing and Chilko long term median run timing. The following Table 36 are the pre-season estimates of timing in Area 20 adopted by the FRP at the June meeting.

Table 36. - Timing Estimates Used for Pre-Season Planning in Area 20

Stock	**2015 Area 20 Timing**
Early Stuart	July 8
Early Summers	August 1
Summer run	August 7
Late run	August 17

The following figure (Figure 43) graphically illustrates the relative run size forecasts and run timing overlaps expected in 2015.

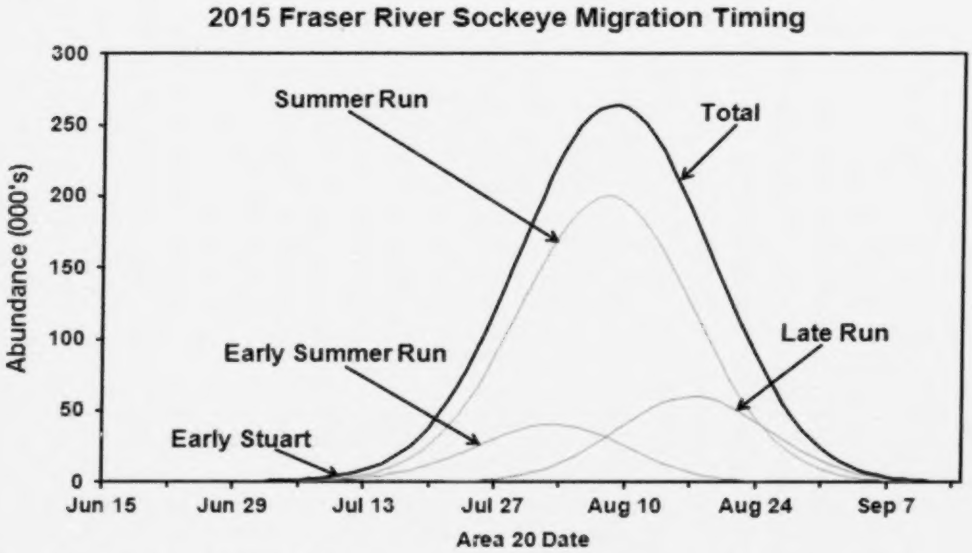

Figure 43.- Relative Run Size Forecasts and Run Timing Overlaps Expected in 2015

Environmental Conditions and Management Adjustments

Management Adjustments (MAs) reflect a quantity of fish that are added to the spawning escapement targets for the purpose of increasing the likelihood of achieving the spawning escapement targets. The general concept is that more fish are needed to be counted going past Mission, than needed for spawning ground escapement and the anticipated catch above Mission, to account for the historic discrepancy between the number of fish estimated at Mission in-season (minus the actual catch above Mission) and the number of fish counted on the spawning grounds. This discrepancy may be due to a number of factors, including, but not limited to: critically high temperatures and/or discharge in the Fraser River, bias in estimates at Mission hydroacoustics and/or spawning ground escapement estimates, biased catch estimates, unreported catch, delayed mortality associated with escapes or releases from fishing gear, natural mortality, and/or predation. While all of these factors are included in the difference between estimates, generally the inputs used to estimate MAs are temperature and discharge rates in the Fraser River during the migration of Early Stuart, Early Summer and Summer run sockeye and the 50% migration timing at Mission for Late run sockeye. In some cases, a MA for an aggregate may include alternatives such as observed medians when the temperature and discharge models are thought not to apply for some stocks. The Fraser Panel determines the pMA values used for in-season management.

For the Early Stuart, Early Summer run and Summer run sockeye, MA estimates can be updated in-season, as river conditions, environmental conditions, peak timing and run size information is acquired. In some years Late run sockeye MA estimates can be updated in-season based on peak in-river timing estimates. Management adjustments for all stock groups may also be adjusted in-season, based on information regarding the fish health of migrating sockeye.

In 2015 the final pre-season Early Stuart pMA was the median of all years from 1999 to 2014. The Early Summer run pMA was a Panel-adopted number that was in between the long term median and the model estimate. The Summer run pMA was the median of the long term dataset to 2014, weighted using a separate pMA of 0.39 for Harrison sockeye. The Late run pMA was the median of the odd year cycle lines since early migration timing began in 1996, weighted by a separate pMA for Birkenhead sockeye (0.18).

The pre-season MA was expressed as a percentage of the spawning escapement goal (pMA) and the number of sockeye this represents for 2015 pre-season run sizes are outlined in the table below.

Table 37. - MA Estimates used for Pre-Season Planning in 2015

	Pre-season Run Size	**pMA**	**MA**
Early Stuarts	16,000	0.68	10,900
Early Summers	837,000	1.0	334,800
Summers	4,675,000	0.17	278,200
Late run	1,236,000	0.95	471,400

2015 Escapement Plan

The Fraser River Sockeye Spawning Initiative is a multi-year collaborative planning process to develop a long-term escapement strategy. The annual escapement strategy seeks a balance between long-term objectives and short-term practical considerations, and combines technical analyses with qualitative judgment. A plan is developed every year and is vetted through consultative processes prior to the fishing season. The annual allowable exploitation rate for each run timing aggregate is adjusted based on Panel adopted run sizes and pMAs. The table below represents the pre-season escapement plan for 2015, as reflected in the final Salmon Integrated Fisheries Management Plan (IFMP). Note that the Management Adjustments in Table 38 have been modified subsequent to the release of the IFMP by the Panel.

Table 38. - 2015 Fraser River Sockeye Escapement Plan over the range of Pre-Season Run Size Estimates

Management Unit		Pre-season Forecast Return p10	p25	p50	p75	p90
Early Stuart	forecast	92,000	137,000	**211,000**	331,000	507,000
	TAM Rule (%)	0%	21%	**49%**	60%	60%
	Escapement Target	92,000	108,000	**108,000**	132,400	202,800
	MA	61,600	72,400	**72,400**	88,700	135,900
	Esc. Target + MA	153,600	180,400	**180,400**	221,100	338,700
	LAER	10%	10%	**10%**	10%	10%
	ER at Return	0%	0%	**15%**	33%	33%
	Allowable ER	10%	10%	**15%**	33%	33%
	available for harvest	9,200	13,700	**30,600**	109,900	168,300
	2013 Performance					
	Projected S (after MA)	50,000	74,000	**108,000**	132,000	203,000
	BY Spawners	45,300	45,300	**45,300**	45,300	45,300
	Proj. S as % BY S	110%	163%	**238%**	291%	448%
	cycle avg S	210,300	210,300	**210,300**	210,300	210,300
	Proj. S as % cycle S	24%	35%	**51%**	63%	97%
Management Unit		**Pre-season Forecast Return** p10	p25	**p50**	p75	p90
Early Summer (w/o RNT)	*lower ref. pt. (w misc)*	141,000	141,000	141,000	141,000	141,000
	upper ref. pt. (w misc)	351,000	351,000	351,000	351,000	351,000
	forecast (incl. misc)	73,000	130,000	253,000	468,000	844,000
	TAM Rule (%)	0%	0%	**44%**	60%	60%
	Escapement Target	73,000	130,000	**141,000**	187,200	337,600
	MA	37,200	66,300	**71,900**	95,500	172,200
	Esc. Target + MA	110,200	196,300	**212,900**	282,700	509,800
	LAER	10%	10%	**10%**	10%	10%
	ER at Return	0%	0%	**16%**	40%	40%
	Allowable ER	10%	10%	**16%**	40%	40%
	available for harvest	7,300	13,000	**40,100**	185,300	334,200
	2013 Performance					
	Projected S (after MA)	44,000	77,000	**141,000**	187,000	338,000
	BY Spawners	80,200	80,200	**80,200**	80,200	80,200
	Proj. S as % BY S	55%	96%	**176%**	233%	421%
	cycle avg S	91,000	91,000	**91,000**	91,000	91,000
	Proj. S as % cycle S	48%	85%	**155%**	205%	371%
Management Unit		**Pre-season Forecast Return** p10	p25	**p50**	p75	p90
Summer (w. RNT & Har)	*lower ref. pt. (w misc)*	1,254,000	1,254,000	**1,254,000**	1,254,000	1,254,000
	upper ref. pt. (w misc)	3,136,000	3,136,000	**3,136,000**	3,136,000	3,136,000
	forecast	1,222,000	2,095,000	**3,718,000**	6,663,000	12,131,000
	TAM Rule (%)	0%	40%	**60%**	60%	60%
	Escapement Target	1,222,000	1,254,000	**1,487,200**	2,665,200	4,852,400
	MA	122,200	125,400	**148,700**	266,500	485,200
	Esc. Target + MA	1,344,200	1,379,400	**1,635,900**	2,931,700	5,337,600
	LAER	10%	10%	**10%**	10%	10%
	ER at Return	0%	34%	**56%**	56%	56%
	Allowable ER	10%	34%	**56%**	56%	56%
	available for harvest	122,200	715,600	**2,082,100**	3,731,300	6,793,400
	2013 Performance					
	Projected S (after MA)	1,000,000	1,254,000	**1,487,000**	2,665,000	4,852,000
	BY Spawners	796,200	796,200	796,200	796,200	796,200
	Proj. S as % BY S	126%	157%	**187%**	335%	609%
	cycle avg S	1,825,400	1,825,400	**1,825,400**	1,825,400	1,825,400
	Proj. S as % cycle S	55%	69%	**81%**	146%	266%
Management Unit		**Pre-season Forecast Return** p10	p25	**p50**	p75	p90
Late (w/o Har)	*lower ref. pt. (w misc)*	313,000	313,000	**313,000**	313,000	313,000
	upper ref. pt. (w misc)	782,000	782,000	**782,000**	782,000	782,000
	forecast	167,000	293,000	**583,000**	1,133,000	2,126,000
	TAM Rule (%)	0%	0%	**46%**	60%	60%
	Escapement Target	167,000	293,000	**313,000**	453,200	850,400
	MA	111,900	196,300	**209,700**	303,600	569,800
	Esc. Target + MA	278,900	489,300	**522,700**	756,800	1,420,200
	LAER	20%	20%	**20%**	30%	30%
	ER at Return	0%	0%	**10%**	33%	33%
	Allowable ER	20%	20%	**20%**	33%	33%
	available for harvest	33,400	58,600	**116,600**	376,200	705,800
	2013 Performance					
	Projected S (after MA)	80,000	140,000	**279,000**	453,000	850,000
	BY Spawners	134,000	134,000	134,000	134,000	134,000
	Proj. S as % BY S	60%	104%	**208%**	338%	634%
	cycle avg S	104,200	104,200	**104,200**	104,200	104,200
	Proj. S as % cycle S	77%	134%	**268%**	435%	816%
Available for Harvest (TF, US, CDN)		172,100	800,900	**2,269,400**	4,402,700	8,001,700
Total projected spawners		1,174,000	1,545,000	**2,015,000**	3,437,000	6,243,000

In-Season Assessment

In-season assessments in 2015 were challenging at times due to the following:

- Record low or near record low Fraser River discharge levels may have altered sockeye and other co-migrating salmon, migration patterns. This change would have impacts at the Mission and Qualark enumeration sites and thus increasing the uncertainty in estimates of sockeye passage for all stock groups;
- Test fishery catch per unit effort were both higher and lower in the marine area test fisheries than the in-river test fisheries, at different times during sockeye migration. This made it difficult to confirm appropriate expansion lines used to project sockeye returning to the Mission hydro-acoustic site;
- Record high or near record high Fraser River water temperatures observed during the entire migration period of sockeye increased uncertainty in MAs;
- The protracted return profile of all stock groupings increased the uncertainty in the timing and abundance for this group;
- It was difficult to determine whether Late run sockeye were displaying delay behaviour in-season given the low abundance of Late run sockeye relative to the abundance of co-migrating pink salmon; and
- Co-migrating pink and higher than typical abundances of chinook salmon made abundance estimates for sockeye difficult at both the Mission and Qualark assessment sites.

Migration and Timing

The final in-season Area 20 migration date (peak) was earlier for Early Stuart sockeye and Early Summer and later for Summer, and Late run sockeye when compared to the pre-season timing estimates (Table 39).

Table 39. - Expected vs. Observed Timing by Stock Group

Stock	**Area 20 Timing**	
	Pre-season	**Final In-season***
Early Stuart	July 8	July 6
Early Summer	August 1	July 30
Summer run	August 7	August 11
Late run	August 17	August 21

* From October 6 meeting.

Fraser River Environmental Conditions and Management Adjustment

The Fraser River discharge was below average reaching record or near record lows throughout the migration of all Fraser sockeye stock groups. Water temperatures were well above average reaching record or near record highs for the entire sockeye migration. High water temperatures can cause serious adverse effects on migratory fish. The figures below illustrate the observed in-season Fraser River discharges at Hope and temperatures at Qualark Creek as well as the corresponding estimated stock aggregate migration periods.

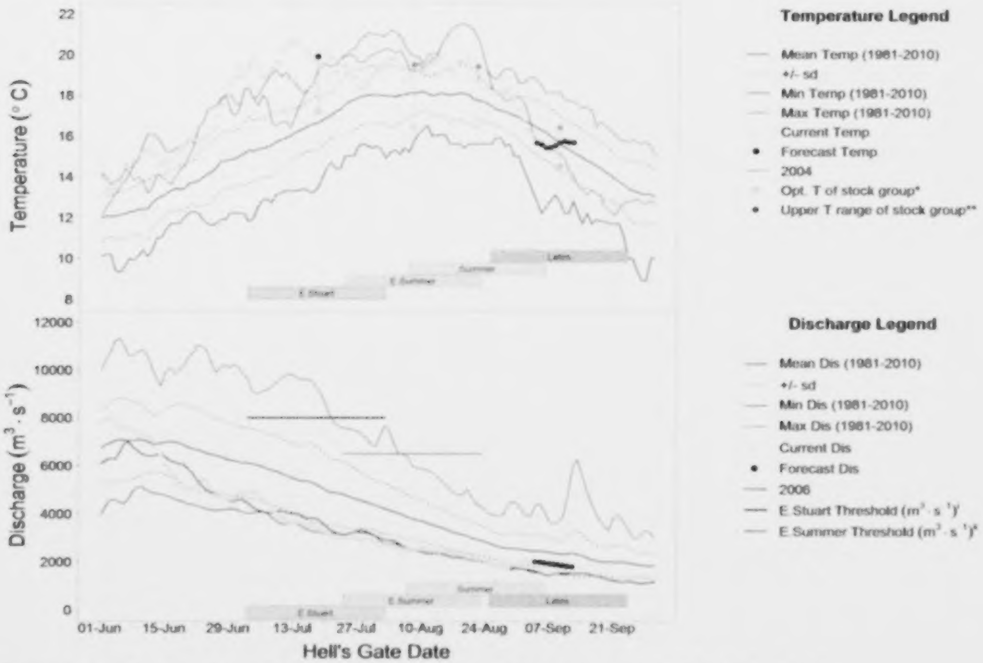

Figure 44. -Fraser River Discharge at Hope and Temperature at Qualark Creek

Management Adjustment models can use environmental conditions and run timing as inputs. Due to the high temperatures observed in July and August the modelled estimates of Early Stuart and Summer run pMAs were significantly higher than pre-season adopted values. While the Panel adopted a higher pMA for Early Stuart, the Early Summer and Summer pMAs remained at the pre-season values based on in-season observations of fish migration and behaviour and in-season run sizes that curtailed fisheries (Table 40).

Table 40. - Pre-season and In-season Management Adjustments

Stock	p50 Forecast	Pre-Season pMA	Pre-Season MA	Final In-season Run Size	Final In-Season pMA	Final In-Season MA[a]
Early Stuart	16,000[b]	0.68	10,900	32,100	4.18	133,800
Early Summer	837,000	1.00	334,800	373,000	1	160,000
Summer	4,675,000	0.17	385,000	1,459,200	0.17	246,000
Late run	1,236,000	0.95	471,400	165,800	0.95	190,000

a Final in-season MA as of September 11, 2015.
b Panel adopted the p25 Early Stuart pre-season forecast.

Run Size

As the season progressed, the FRP considered technical advice provided by the Pacific Salmon Commission and the Fraser River Panel Technical Committee members and bilaterally adopted run sizes that reflected in-season assessment information.

The final in-season run size estimate for Early Stuart was near the pre-season p50 forecast. The pre-season p50 forecasts for Early Summer, Summer and Late run management aggregates were considerably higher than the final in-season run sizes, particularly for Late run sockeye (see the Table below).

Table 41. - Pre-Season Forecasts vs. Final In-Season Run Size Estimates

Stock	**Pre-Season Forecast**			**Final In-Season Estimate (Oct 6)**
	25% Probability	**50% Probability**	**75% Probability**	
Early Stuart	16,000	30,000	58,000	32,100
Early Summer	424,000	837,000	1,603,000	373,000
Summer	2,681,000	4,675,000	8,764,000	1,549,200
Late	703,000	1,236,000	2,210,000	165,800
Total	**3,824,000**	**6,778,000**	**12,635,000**	**2,120,100**

Diversion Rate

The annual diversion rate of sockeye through Johnstone Strait was lower than forecast (69% in-season vs. 95% preseason). The figure below outlines diversion rate estimates in 2015 relative to other cycle years.

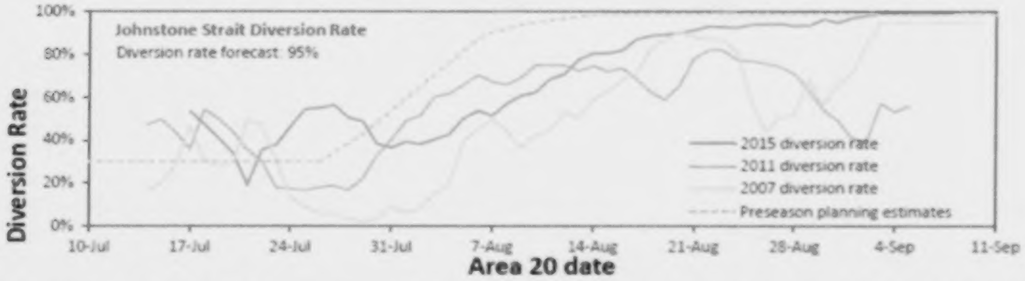

Figure 45. - The 2015 Diversion Rate Compared to Recent Diversion Estimates for the 2015 Cycle.

Post Season

Sockeye Migration and Escapement Estimates

Early Stuart sockeye did experience difficult migratory conditions in the Fraser River. Water temperatures were well above the 1981-2010 mean temperature and were above the 1981-2010 maximum observed temperature throughout the majority of their migration period. Discharge levels during the majority of the Early Stuart migration period were well below the 1981-2010 mean and approached the 1981-2010 minimum levels.

The 2015 preliminary escapement estimate for Early Stuart sockeye is 10,084 which is more than 13 times the brood year escapement (758), and is 23% of the long term cycle average. It is also 31% of the in-season escapement target (32,100) but is 168% of the estimate of potential escapement as derived from the Mission hydro acoustic site, catches upstream, and the adopted pMA. Spawning success for Early Stuart sockeye in 2015 is an estimated 75.1% (24.9% pre-spawn mortality), well below the long term average of 88.6% successful spawners.

Early Summer run sockeye also experienced high water temperatures, well above the long term mean (1981-2010), for the duration of their migration times and reached historical maximum temperatures. Discharge levels throughout the entire migration period of Early Summer run sockeye were well below the historic averages and were at or near historical minimums. The high temperatures and low discharge levels persisted for the entire Summer run migration period. Late run sockeye migrating into the river experienced higher than average water temperatures early in their migration and near average to below average temperatures throughout the remainder, while discharge levels remained below historical means for the entire migration period.

The 2015 preliminary escapement estimate of 139,833 Early Summer sockeye is 65% of the brood year (216,337) and 95% of the cycle average of 146,481. This is the second largest Early Summer run sockeye spawning escapement on record for this cycle year. The estimated spawning success for the Early Summer run aggregate in 2015 is 94.3%, which is well above the long term average of 89.5%. The Table below outlines the predicted escapement relative to the escapement goals at the final in-season sockeye run sizes. Spawning ground estimates for Summer run and Late run sockeye are currently not available.

Table 42. - Preliminary Escapement Information to Date

Management Group	Escapement Goal @ final in-season run size [a]	Predicted Diff. Btw Estimates (DBE) [b]	Predicted Spawn. Escapement [bc]	Prelim. Spawn.
Early Stuart	32,100	-81%	6,100	10,100
Early Summer	149,200	-50%	164,100	139,800
Summer	1,448,000	-15%	1,143,800	Not Available
Late-run	165,800	-49%	80,300	Not Available
Total	***1,795,100***		***1,394,300***	

[a] Spawning Escapement Target based on adopted run size and Canada's escapement plan.

[b] DBEs are calculated from Fraser Panel adopted proportional MA values

[c] Predicted spawning escapement: Run Size - Catch to date + DBE. In-season estimates as of Oct 6 2015.

[d] Preliminary adult spawning escapement estimates (not including jacks). Preliminary Summer and Late spawning ground estimates will be available in Feb 2016.

Post-season Catch Estimates

The current estimates of catch in this report are final in-season estimates as of October 6, 2015 and will likely increase slightly when the post-season catch estimates are finalized. Preliminary post season estimates of catch by stock group will be available in January 2016.

Fisheries

First Nations Food Social and Ceremonial Treaty Fisheries

There were directed harvest opportunities for Fraser sockeye in First Nations FSC fisheries in both the marine and freshwater areas.

Recreational Fisheries

There were no recreational fisheries directed on Fraser River sockeye in 2015.

Commercial

Commercial Harvest

No directed commercial or recreational fisheries in Canada in 2015. Some small, incidental by-catch of Fraser sockeye occurred when conducting fisheries on other species (i.e. pink salmon fisheries).

First Nation Commercial Harvest

There were no First Nation commercial harvest opportunities directed on Fraser River sockeye in 2015.

Excess Salmon to Spawning Requirements (ESSR) Fisheries

There were no ESSR opportunities directed on Fraser River sockeye in 2015.

Fraser River Pink

Objectives and Overview

The escapement strategy for Fraser River pink salmon continues to be based on an interim escapement goal of 6M Fraser River pink salmon for run sizes between the lower and upper fisheries reference points; with an escapement target of 30% of the total return for run sizes above 20M and an exploitation rate that linearly increases from 0% to 15% at run sizes below the lower fisheries reference point. Table 43 below outlines total allowable mortality rules for the range of Fraser pink forecast run sizes.

In most years, concerns for co-migrating Late Run Fraser Sockeye are the main harvest constraint for International fisheries, with added Canadian domestic constraints due to Interior Fraser Coho.

Stock Status

Pre-season Assessment

In 2015, the Fraser pink forecast was highly uncertain given the changes to the assessment methods through time with an 80% prediction interval of 7.66M – 27.78M. The Fraser River Panel (FRP) adopted the mid-point (p50) run size forecast of 14.46M Fraser pink for planning purposes. At this run size, the escapement goal is 6.0M.

The DFO forecast 50% date (peak timing) for Fraser pink salmon arriving to Area 20 was August 28 and the long term median diversion rate estimate through Johnstone Strait of 56% was used for pre-season planning purposes.

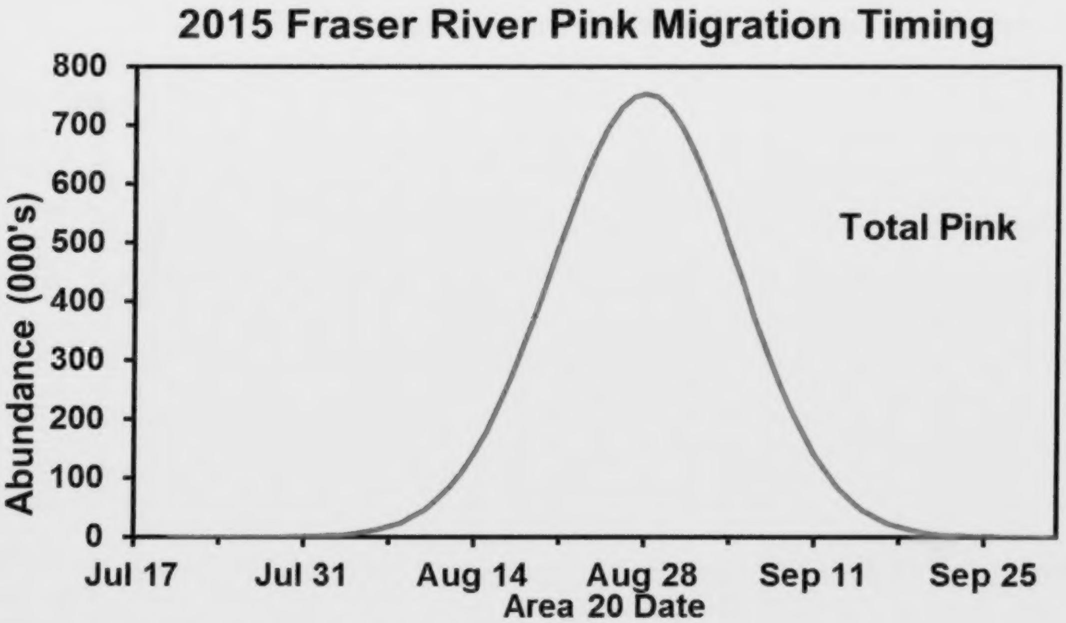

Figure 46. - 2015 Fraser River Pink Migration Timing.

The total allowable mortality at the p50 pre-season run size forecast was 58%.

Table 43. - 2015 Fraser River Pink Escapement Plan- Pre-Season Run Size Estimates and Allowable Exploitation Rates.

Fraser Pinks

7,059,000	Lower Fishery Reference Point
20,000,000	Upper Fishery Reference Point
70%	Maximum Exploitation Rate

	Pre-season Forecast Return				
	p10	p25	**p50**	p75	p90
forecast	7,661,000	10,385,000	14,455,000	20,450,000	27,776,000
escapement target	6,000,000	6,000,000	6,000,000	6,135,000	8,333,000
allowable ER	22%	42%	58%	70%	70%

In 2015, there were pre-season concerns expressed by Canada and the US around sockeye by-catch in directed pink fisheries as there could be limited sockeye TAC available when pink fisheries were anticipated. Both parties agreed that pink fisheries would be undertaken while striving to stay within sockeye harvest constraints.

Due to conservation concerns for some co-migrating species, it was anticipated that, similar to previous years, alternative fishing gear may be employed to access Fraser Pink TAC. Alternative gears used in the past have included beach seines & shallow seines in the Fraser River.

In-Season Assessment

The pre-season projection of peak timing date (August 28) was about 1 week later than the final in-season estimate (August 22). The final in-season annual diversion rate through Johnstone Strait was lower than the long term median of 56% and estimated to be 38%.

As the season progressed the Fraser River Panel (FRP) considered technical advice provided by the Pacific Salmon Commission (PSC) and the Fraser River Panel Technical Committee (FRPTC), and bilaterally adopted run sizes that reflected in-season assessment information. On September 8 the FRP adopted a final in-season run size estimate of 6.2M Fraser River pink, which was well below the p10 forecast level of 7.66M. The following table highlights the timeline of in-season run size changes that were adopted by the FRP.

Table 44. - Timeline of Run Size Changes Adopted by FRP in 2015.

Stock	**Preseason**	**Sept 1**	**Sept 8**
Fraser Pink	14,455,000	**6,000,000**	**6,200,000**

Post Season

Standard in-season run size estimates for Fraser River pink salmon are based on marine area test fishery CPUE multiplied by historical expansion lines. A review of the Mission hydro acoustic data and DIDSON data will be analyzed post-season to generate an alternative Fraser pink passage estimate at Mission. When added to catch estimates (seaward of Mission), this may provide an alternative to the test fishery based estimates of total pink salmon run size. This approach is supported given there is no comprehensive spawning ground assessment programs for Fraser pinks. The Fraser Panel adopted a preliminary post-season estimate of 5,781,300 pink salmon at the October post-season meeting.

Post-season catch estimates will be available in January 2016. The post-season catch of Fraser pinks will likely be close to the in-season estimates outlined below. Non-Fraser pink catch was estimated to be 423,500 pinks.

Fisheries

The table below outlines preliminary Fraser pink catch estimates in Canada and the United States in 2015. (See also Table 57 for most up to date catches).

Table 45. - Preliminary Fraser Pink Catch Estimates in Canada and US in 2015

Total Fraser Pink Caught [a]	**413,700**
Test fisheries (Panel approved)	49,200
Canadian Catch	**29,800**
Canadian commercial fisheries (includes commercial selective & First Nation economic and demonstration fisheries)	500
Canadian First Nation FSC fisheries	29,300
Canadian recreational fisheries	0
Canadian test fisheries (Albion)	0
United States Catch	**334,700**

[a] Preliminary in-season catch as of October 6, 2015 rounded to the nearest 100 fish. Does not include non-Fraser pink catch.

First Nations Food Social and Ceremonial and Treaty Fisheries

There were directed harvest opportunities for Fraser pinks in First Nations FSC fisheries in-river. There are no provisions for directed pink harvest for FSC-type purposes in any current Final Agreements.

Recreational Fisheries

There were Fraser River pink recreational harvest opportunities in 2015.

Commercial

Commercial Harvest

There was one Commercial fishery opening for pink salmon in 2015, but no salmon were retained.

First Nation Commercial Harvest

First Nations economic opportunity and demonstration fisheries occurred in 2015.

Excess Salmon to Spawning Requirements (ESSR) Fisheries

There were no ESSR opportunities directed on Fraser River pink salmon in 2015.

Southern B.C. Coho

Objectives and Overview

Coho stocks in Southern B.C. are managed domestically and through international Abundance Based Management provisions which are outlined in the Pacific Salmon Treaty. Harvest levels are outlined in the Treaty's Southern Coho Management Plan, which provides maximum exploitation rates for treaty-defined Management Units (MUs) dependent on their categorical status as defined by the MU's country of origin. It is Canada's responsibility to ensure that coho management units covered by the Treaty are not harvested beyond the maximum exploitation rate as outlined in the Treaty in Canadian waters. Canada may also opt to take additional measures to reduce fisheries impacts below treaty-defined ER caps in domestic fisheries to further advance conservation and rebuilding objectives on Canadian stocks.

In Southern B.C., coho management measures in commercial and recreational fisheries are implemented based on their impacts to specific stocks. Southern B.C. coho management is primarily based on managing to exploitation rate limits on Interior Fraser River (IFR) Coho, with benefits accruing to Lower Fraser, Strait of Georgia, Johnstone Straits MUs. In outside Southern B.C. waters, WCVI coho stocks are a primary consideration in management.

Beginning in 1997, DFO implemented a number of fishery management measures to reduce the harvest impacts on Interior Fraser River coho, with more severe measures being implemented starting in 1998. From that time to 2013, Canadian fisheries impacting these stocks were curtailed to limit the exploitation rate to 2 to 3 percent, with an additional 10 percent permitted in U.S. fisheries (as per the Pacific Salmon Treaty management regime). In 2014, for one year only, an exploitation rate of up to 16% was permitted in Canadian fisheries. Despite some improvements to forecast returns and spawner abundances in some recent years, there is no evidence that IFR coho has departed from the 'low' productivity regime that has persisted since the 1994 return year. Current productivity is still well below that in the relatively high productivity period of 1978-1993. Spawner abundances in 2014 were well below recent years' levels and pre-season expectations based on projected fisheries impact and the forecast range highlighting continued uncertainties about stock productivity and/or fisheries impacts.

In 2015, an IFR coho exploitation rate of 10% or less was permitted in Canadian fisheries, with an additional 10% permitted in U.S. fisheries (as per the Pacific Salmon Treaty management regime). For Canadian fisheries, an exploitation rate "buffer" was applied to account for uncertainties in the estimate of fisheries impacts and differences in Canadian domestic and PST-related methodologies for assessing exploitation rates (with the latter typically being slightly higher). This meant that pre-season projections of planned Canadian fisheries impacts were kept below 8.5% as measured through domestic models. Coho management measures varied in Southern B.C. in 2015, depending on the area of harvest and impact on specific coho stocks.

The status of IFR coho stocks has generally remained poor in spite of the low overall exploitation rates. Escapement results for IFR coho in 2014 fell below the short-term recovery plan escapement goal of 20,000 and were well below the previous three years' escapements. Preliminary escapement results from 2015 are even lower than those observed in 2014.

The aggregate wild coho escapement (generation 2012-2014) to the Interior Fraser River watershed averaged 39,500 adults (geometric mean). This is an increase over previous generational averages since conservation measures were implemented in 1997-1998. In addition, there have been improved returns of coho in Northern B.C., the west Coast of Vancouver Island and inside Strait of Georgia stocks in recent years.

Based on analysis of the returns and exploitation rate (ER) analysis, a decision was made to increase the ER from 3 percent to 10 percent or less for Canadian fisheries in Southern B.C. For Canadian fisheries, management measures were relaxed for FSC fisheries in the B.C. Interior and the lower Fraser including mainstem areas. In the marine recreational fishery, retention of additional enhanced coho and in some areas and times retention of one unmarked coho was allowed. Commercial fisheries, including First Nation economic, demonstration and commercial fisheries, were not permitted to retain coho in most southern B.C. waters. Additional fishing effort for more abundant stocks and species was permitted resulting in increased impacts on coho as release mortalities in these fisheries.

No additional management measures were in place in 2015 to protect Strait of Georgia coho stocks beyond measures put in place for Interior Fraser River coho.

Management measures in place for WCVI coho provided opportunities for increased recreational and commercial fisheries, with full harvest opportunities in WCVI areas where Interior Fraser coho were not considered to be impacted. These were largely terminal opportunities in portions of Area 23-27, where stock composition information showed that Interior Fraser River coho were not found.

In WCVI areas/times where Interior Fraser River coho are known to be prevalent, non-retention of unmarked coho remained in effect. Adjustments were made in the 2015 commercial troll fishery plans to allow unmarked coho retention on the WCVI once Interior Fraser River coho were considered to have moved through the area after mid-September.

Preliminary coho catch estimates are outlined in Table 46. Coho catch and release information from all fisheries can be found in Table 58.

Table 46. - Preliminary coho catch estimates of the recreational, First Nations (FSC, economic opportunity and ESSR), and commercial fisheries for Southern B.C. in 2015.

	Kept	**Released**
Recreational	52,729	87,872
First Nations*	2,850	118
Commercial**	19,574	11,898
ESSR	15,932	250
Total	**91,085**	**100,138**

*includes FSC and treaty fisheries

**includes FN Commercial harvest through demonstration fisheries, economic opportunities and harvest agreements

Stock Status

Upper Fraser

Interior Fraser

Field programs to estimate escapements are still underway, and only very preliminary results are available for some systems. Early returns to the Interior Fraser River indicate that escapement may be again much lower than 2013 and 2014 returns and are likely well below levels observed in the 2012 parental brood escapements. Very preliminary data indicate returns to the entire Interior Fraser River may be below 15,000; however, preliminary estimates are not yet available for many systems, and near final estimates will not be available until early February, as most field studies are not yet completed. Where biological sampling was possible, spawner abundance was lower, observed sex ratios were highly skewed to males, and fecundities were also reduced below long term averages in females taken for brood stock suggesting further declines in stock productivity.

Lower Fraser

Escapement studies are currently underway, and many populations had not reached peak spawning at the time of writing. Preliminary escapement estimates for the surveyed systems should be available by late February 2016.

A hatchery coho indicator stock is provided by Inch Creek hatchery. Adult escapement is assessed annually and marine survival and exploitation rates are calculated, these estimates are not yet available. Adult coho visual surveys are conducted for a number of systems within the lower Fraser River as part of multi-species assessments; however, estimates are not yet available as the field programs will not be complete until late January or early February 2016. Early hatchery information from the Lower Fraser also indicates a decline in fecundity.

Strait of Georgia

Coho salmon have been in a low productivity regime since the early 1990s. Marine survivals have been less than replacement levels for several years, but have been slowly increasing since the late 2000s. Updated estimates are not yet complete. Early results indicate a large decrease in abundance this year.

Hatchery stocks

The preliminary 2015 coho escapement estimates of monitored hatcheries generally show a large decrease in abundance over the previous year. Escapements to northern Strait of Georgia stocks (Puntledge, Qualicum, and Lang) are lower than the previous year and lower than the five year average. Generally, escapements are similar to the low abundance period of 1995-2007. Escapements to southern Strait of Georgia stocks are not monitored outside of Goldstream River, where results will not be available until January. Early results indicate an escapement below the five year average.

Wild stocks

In the past, both Black Creek and Myrtle Creek have served as indicators of Strait of Georgia Coho. Myrtle Creek was discontinued as an indicator in 2014.

Black Creek

The 2015 Black Creek adult project is on-going; escapement to date has been below average with water levels very low through the end of October. The majority of adult Coho moved past the fence over the course of two consecutive weekends (Oct 30-Nov 1 and Nov 7-8) that correlated with rain events. The preliminary escapement estimate (mark recapture) of 3,436 adults is a decrease from last year's estimate (4,991) and shows a regression from the relatively strong return in 2013; and a moderate decrease from the brood year 2012 (5,317). This adult return indicates a decline in marine conditions during the 2014-2015 marine residence for Strait of Georgia Coho salmon.

West Coast Vancouver Island

In most recent years, spawning abundances for wild WCVI coho populations are near historic levels. However, the overall production of WCVI coho is likely much lower than historic levels – i.e. less fish are caught in fisheries because low fishery impacts are maintaining spawning levels. Hatchery production has also been reduced. Data are not finalized for 2015; however preliminary results suggest a significant decline in spawning abundance (and overall WCVI coho abundance) relative to the large production observed in 2014.

Johnstone Strait and Mainland Inlet

The Keogh River plays an important role as the wild coho indicator stock for the upper Johnstone Strait area. Smolt production in 2014 was around 67,000, slightly above the long term average of 63,000. Preliminary indications from the resulting adult escapement in 2015 are that marine survival declined significantly relative to the steady improvements we had seen in previous years. Preliminary estimates of 650 adult coho returns in 2015 are the lowest on record since 1998. Smolt production from the Keogh in 2015 of approximately 112,000 was the highest production since the inception of the program in 1977 and well above the long term average. This strong smolt production will hopefully buffer the poor marine condition anticipated to persist through 2015 and 2016. The expectation in 2016 will be for below average returns

The marine survival indicator for Area 13 is the Quinsam River Hatchery. Consistent with the indication of poor marine conditions seen to the north, the Quinsam coho return declined compared with the very strong returns over the previous two years, and equivalent in size to the 2012 brood year in both adult and jack components with approximately 6,400 adults and 2,200 jacks returning.

Preliminary extensive escapement reports for coho in many systems are indicating moderate to low abundances, a decline from last year and slightly below average. The building trend of the past few years looks to have reverted back to average to below average escapements and indications are that poor coho returns will likely continue in 2016.

Fisheries

First Nations Food Social and Ceremonial and Treaty Fisheries

B.C. Interior

FSC fisheries in the area target sockeye, chinook or pink salmon. In 2015, any coho caught as by-catch could also be retained. Directed opportunities were permitted, subject to abundance, in the following tributaries to the Thompson River: Deadman River, Dunn Creek, Fennel Creek, Raft Creek, Lemieux Creek, Louis Creek, Eagle River and Salmon River. Preliminary catch reports indicate 55 coho were retained in directed FSC fisheries in the Thompson River system. One coho was encountered and retained for FSC purposes in the Kamloops Lake chinook and pink demonstration fishery.

Lower Fraser

There were no coho directed fisheries in the Lower Fraser in 2015. Total coho retained in Lower Fraser River FSC fisheries targeting other species of salmon in 2015 was 391 and 117 coho were released. Retention of both hatchery-marked and wild coho was authorized in Lower Fraser FSC fisheries.
Strait of Georgia FSC Fisheries

Data are still being compiled on various First Nations catches in the Strait of Georgia. There were no coho reported caught in FSC fisheries at the time of this report.

WCVI FSC and Treaty Fisheries

There were FSC gill net and hook and line openings during the summer and fall season. The Maa-nulth domestic harvest was 1,067 coho. The remainder of WCVI First Nation's reported catch was 850 coho. The combined harvest was 1,917 coho.

Johnstone Strait

Data are still being compiled on various First Nations catches in the Johnstone Strait with the total preliminary catch estimated at 486 coho caught in FSC fisheries.

Recreational Fisheries

Tidal Recreational Fisheries

Tidal recreational fisheries can be categorized as occurring in: mixed stock areas, where multiple stocks are found concurrently in the same fishing area, and in terminal areas where local single stocks dominate the catch. Areas where mixed stocks occur typically have more restrictive management measures in place that are designed to protect Interior Fraser coho stocks. In terminal areas, opportunities are provided based on abundance forecasts. The table below outlines the areas in Southern B.C. and the general coho regulations pertaining to them.

Table 47. - Southern B.C. coho fishery regulations in 2015.

Mixed stock fishing area	*Daily Limit (marked or unmarked)*	*Size Limit*	*Coho Season*
Johnstone Strait	2. 1 may be unmarked	30 cm.	June 1 – Dec 31
Northern Georgia Strait	2 marked	30 cm.	June 1 – Sep 10
Northern Georgia Strait	2. 1 may be unmarked	30 cm.	Sep 11 – Dec 31
Southern Georgia Strait	2 marked	30 cm.	June 1 – Sep 30
Southern Georgia Strait	2. 1 may be unmarked	30 cm.	Oct 1 – Dec 31
Juan de Fuca Strait	2 marked	30 cm.	Jun 1 – Sep 30
Juan de Fuca Strait	4. 1 may be unmarked	30 cm.	Oct 1 – Dec 31
WCVI – Inshore	4	30 cm.	June 1 – Dec 31
WCVI – Offshore	2 marked	30 cm.	June 27 – Aug 31
WCVI – Offshore	4 marked	30 cm.	Sep 1 – Sep 10
WCVI – Offshore	4	30 cm.	Sept 11 – Dec 31

* for specific management measures in specific areas refer to the information provided in the Fishery Notices.

The table below outlines coho catch and release information for recreational coho fisheries in Southern B.C. The WCVI coho fisheries use the surfline as a boundary between distinguishing coho catch in the mixed-stock fishery (offshore) and catch in the terminal area (inside the surfline).

Table 48.- Preliminary Recreational coho kept catch and released estimates for Southern B.C. in 2015.

Area	Kept	Released
WCVI – Inshore (20W – 27)	18,091	11,932
WCVI – Offshore (21 – 127)	7,716	17,699
Strait of Georgia (13-19 May – Sep*)	7,216	27,562
Fraser River**	23	35
Juan de Fuca (19-20 Feb – Oct)	11,083	25,811
Johnstone Strait (11-12 Jun-Aug)	8,600	4,833
TOTALS	**52,729**	**87,872**

** Fraser R. data represents in-season preliminary info. to September 15, 2015 for the Fraser R. mainstem fishery only; Chilliwack and Nicomen fishery estimates are not yet available.

Non-Tidal Recreational Fisheries

Region 1: Vancouver Island Tributaries

Freshwater restrictions were in effect in most tributaries on Vancouver Island due to drought like conditions in 2015. Rivers on the southern half of Vancouver Island (Regions 1-1 to 1-6) were closed to angling on July 8 and the remaining portions of Region 1 (Regions 7-13) closed to angling August 1. Region 1 rivers were re-opened on September 11 due to improved water flows and near-normal temperatures.

Northern Vancouver Island

Typical Non-tidal openings for coho are available on:

- Cayeghle River (including the Colonial River) from April 1 to March 31 for one per day;
- Campbell/Quinsam River from October 1 to December 31 for four per day, two of which could be marked over 35 cm;
- Cluxewe River from April 1 to March 31 for two per day, hatchery marked only;
- Kokisilah River from April 1 to March 31 for one per day, maximum size limit of 35 cm;
- Nahwitti River from April 1 to March 31 for one per day; and
- Quatse River from June 15 to March 31 for two per day, hatchery marked only.

Anglers are restricted to the use of barbless hooks. The Campbell/Quinsam fishery was the only fishery of the above that was monitored by creel survey during 2015.

Strait of Georgia

During 2015 there were limited non-tidal openings throughout the Strait of Georgia:

- Qualicum River from October 16 to December 31 for four per day, two of which could be over 35 cm;

- Chemainus River from October 15 to March 31 for one per day, maximum size limit of 35 cm; and

- Nanaimo River from October 15 to March 31 for one per day, maximum size limit of 35 cm.

West Coast Vancouver Island

- Somass/Stamp River from September 11 to December 31 the daily limit was two, marked or unmarked. The Somass/Stamp Rivers were not monitored by creel survey during 2015. A single barbless hook restriction is in effect all year and there is a bait restriction in the Upper Somass and Stamp from May 1 to October 31.

- Nitinat River from October 15 to December 31 the daily limit for coho was two, marked or unmarked. The 2 week closure between October 1 and October 14 provides protection to chinook salmon during the peak spawning period. The Nitinat River was not monitored by creel survey during 2015. The area above Parker Creek is closed to fishing. A single barbless hook restriction is in effect all year and there is also a bait restriction in effect.

- Conuma River from September 11 to December 31 the daily limit was two coho, marked or unmarked. The Conuma River was not monitored by creel survey during 2015.

- Washlawlis River and Waukwass River and other West Coast Rivers are open year-round with a daily limit of one coho, marked or unmarked. Barbless hooks are required. No creel survey information is collected. Other rivers receiving some directed effort for coho stocks are the Wakeman, Artlish, Zeballos, Tahsis, Burman, Ash, Taylor, Pacheena, Toquart and Leiner. The quota for all west coast streams unless identified above is zero.

Fraser River and Tributaries

During 2015, the retention of two hatchery-marked coho per day was permitted once the majority of the Interior Fraser wild coho population had migrated through the area. The opening dates by area were as follows:

- From the CPR Bridge at Mission, B.C. upstream to the Highway #1 Bridge at Hope - October 13 to December 31.

- From the Highway #1 bridge at Hope to Sawmill Creek - October 18 to December 31.

- There are no directed coho openings in the Fraser River or tributaries upstream of Sawmill Creek.

Due to adverse environmental conditions, an in-season angling closure was implemented in most rivers/streams from July 22 to September 13, 2015. The following tributaries to the Fraser River were open during the dates stated below except during this July to September closure:

- Alouette and Coquitlam Rivers from October 1 to December 31 for one per day.

- Kanaka Creek from November 1 to November 30 for one per day.

- Chilliwack River/Vedder and the Chehalis River for four per day from July 1 to December 31.

- Harrison River for four per day from September 1 to December 31.

- Nicomen Slough, Norrish Creek and the Stave River for four per day from January 1 to December 31 with only two over 35 cm.

During 2015, there were limited non-tidal openings for hatchery-marked coho on the following systems which enter Boundary Bay:

- Little Campbell River and the Serpentine River one per day from October 1 to December 31.
- Nicomekl River one per day from September 14 to December 31.

Commercial

Commercial Harvest

In 2015, Southern B.C. commercial fisheries were regulated so that impacts on coho, particularly Interior Fraser coho stocks, were minimized. Retention of coho by-catch in most of these fisheries was not permitted, including the Fraser River, with the exception of a few terminal seine and gill net fisheries targeting chinook and sockeye where Interior Fraser River coho were not prevalent.

Area G troll AABM chinook fisheries were permitted to retain all coho by-catch from September 15 until December 31, 2015.

For the 2014/2015 (October 1, 2014 to September 30, 2015) AABM chinook fishing periods, the estimated total coho retained was 16,501 and releases during this period were estimated at 1,883 coho salmon. The majority of the coho harvest (10,422 pieces) occurred in October 2014.

WCVI Terminal Area Coho

In 2015, commercial gill net fisheries occurred in Alberni Inlet and Nootka Sound targeting sockeye, chum and chinook terminal returns. Retention of both hatchery and wild coho were permitted.

The total WCVI coho by-catch in commercial gill net fisheries was 278 pieces retained and 49 released.

In addition, there were targeted coho and chinook` fisheries in September in upper Alberni inlet in Subarea 23-1. These fisheries were designed to target coho and small male chinook. The fisheries were restricted to 6 and 1/4 inch mesh. The openings were 12 hours in duration overnight and they occurred Sept 10, 11, 17 and 18. The fisheries were not successful. The fleet size was small with the largest daily participation being 16 vessels. The total coho catch was 57 pieces.

The total retained coho catch in WCVI Area D gill net fisheries for both by-catch and directed fisheries was 335 pieces in 2015.

First Nation Commercial Harvest

B.C. Interior

There were no economic opportunity fisheries or First Nation commercial demonstration fisheries in the B.C. Interior (Fraser River above Sawmill Creek) targeting coho in 2015.

Lower Fraser

There were no directed coho fisheries authorized in 2015; however hatchery marked coho were authorized to be retained in both pink and chum salmon economic opportunity and demonstration fisheries, and all wild coho were to be released. In total, 526 hatchery marked coho were retained and 2,867 coho were released from all economic opportunities, demonstration and harvest agreement.

Strait of Georgia

There were no economic opportunity fisheries or First Nations' commercial demonstration fisheries in the Strait of Georgia targeting coho in 2015.

WCVI

In 2015 an agreement was reached with the First Nations for an economic opportunity fishery targeting coho (Area 23). The TAC for this fishery was 3,000 pieces. The fisheries were moderately successful. There were two gill net fisheries in September for a total catch of 1,044 pieces.

T'aaq-wiihak Salmon Demonstration Fishery

The Department authorized both an AABM and ISBM chinook salmon demonstration fishery for the T'aaq-wiihak Nations in 2015. Coho by-catch, both wild and hatchery, was permitted to be retained after September 15th in the AABM fishery and the whole season in the ISBM fishery. A total of 574 coho were retained and sold in the AABM fishery and 7 coho in the ISBM fishery.

Johnstone Strait

There were no economic opportunity fisheries or First Nation commercial demonstration fisheries in Johnstone Strait targeting coho in 2015.

Excess Salmon to Spawning Requirements (ESSR) Fisheries

B.C. Interior

There were ESSR no fisheries in the B.C. Interior (Fraser River above Sawmill Creek) targeting coho in 2015.

Lower Fraser

There were several ESSR fisheries in the Lower Fraser Area for First Nations. These were conducted at Capilano, Chilliwack, and Inch Creek Hatcheries for a total catch of 11,284 coho. Chehalis, Tenderfoot, and Weaver Creek Hatcheries reported no coho harvest for ESSR in 2015.

Strait of Georgia ESSR Fisheries

There was an ESSR harvest at the Big Qualicum hatchery included 2,528 coho. An ESSR fishery for chum on the Cowichan River encountered and released an estimated 250 coho salmon.

WCVI ESSR Fisheries

Two First Nations were issued a joint ESSR Licence for coho at the Robertson Creek Hatchery facility. The total catch was 2,120 coho. An ESSR Licence for Nitinat Lake and the Nitinat Hatchery was also issued, but no harvest occurred.

The total catch WCVI for the ESSR fisheries was 2,120 coho.

Johnstone Strait

There were no ESSR fisheries in Johnstone Strait targeting coho in 2015.

Johnstone Strait Chum

Objectives and Overview

The Johnstone Strait chum fisheries primarily target chum that spawn in Johnstone Strait, Strait of Georgia, and Fraser River areas. In order to improve the management of Johnstone Strait chum fisheries and to ensure sufficient escapements, a 20% fixed exploitation rate strategy was implemented in 2002 in Johnstone Strait. Of the 20% exploitation rate, 15% is allocated to the commercial sector and the remaining 5% is set aside for test fisheries, First Nations FSC, recreational harvesters, and to provide a buffer to commercial exploitation. Since the implementation of this management strategy, annual fisheries have been planned well in advance of the chum return.

The pre-season commercial fishing plan was developed based on expectation of effort, exploitation levels by gear group, and historical run timing (peak estimated as October 9). The fishing plan was developed to achieve the commercial allocation sharing guidelines of 77% for seine, 17% for gill net and 6% for troll. Adjustments to the fishing plan are made in-season, if warranted.

As outlined in Chapter 6 of the Pacific Salmon Treaty, commercial chum fisheries in Johnstone Strait are suspended when an abundance estimate of less than 1 M chum salmon migrating through Johnstone Strait is identified. This did not occur in 2015 and all fisheries proceeded as scheduled.

In 2015, the Area B (seine) and Area D (gill net) were competitive derby fisheries, and the Area H (troll) fleet was managed using an individual transferable effort (ITE) demonstration fishery.

Chum catch and release information from all fisheries can be found in Table 59.

Stock Status

Mixed Stocks

The main components of the Inside South Coast (ISC) chum return include both Fraser and non-Fraser stocks. These stocks are typically dominated by four year old fish which were from an average 2011 brood return that out-migrated to the ocean in 2012. It was quite apparent that other salmon species that also out-migrated in 2012 encountered improved survival conditions (i.e. pink and coho returns in 2013). One concern preseason was that the lower than average fish size of the 2011 brood would have some negative affect on the survival of the 4 year old returns in 2015. The preseason expectation for ISC chum suggested near target returns to the area but was highly uncertain.

The Johnstone Strait test fishery, which ran from September 15th through November 4th, provided timing and abundance information for the 2015 return, which is important in assessing the performance of the 20% fixed exploitation rate strategy. It also provided an index of abundance, used to determine the likelihood of the number of returning chum being over the 1.0 million critical level (requirement for commercial openings). Catch per unit effort in the test fishery was higher than what was encountered in 2010 and it was determined that the ISC index of abundance was likely above the 1.0 million critical level (Figure 47). As expected, the age composition derived from the test-fishery and commercial samples was dominated by 4 year olds but the 3 year old composition was also high and grew substantially as the season progressed.

Test fishery catches can be found in Table 63.

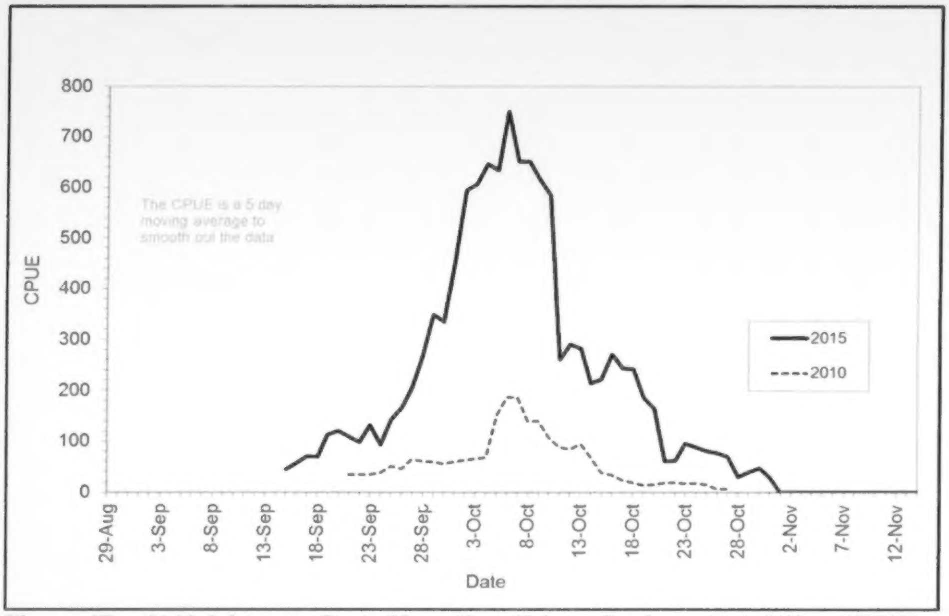

Figure 47. - 2015 Johnstone Strait Chum Test Fishery Catch per Unit Effort (CPUE) comparison to 2010 (lowest chum return in recent years)

Preliminary information on escapements and catches to date suggest returns were average to below average in most Inner South Coast chum populations. In-season information is still being collected and analyzed regarding total stock size.

Terminal returns

Preliminary information on the status of summer run chum in the Johnstone Strait area indicated varied returns. Assessments of terminal fall chum, such as the Nimpkish, have been hampered with high river flows during October/November and little information is available at this time on the status of those stocks.

Fisheries

First Nations Food Social and Ceremonial and Treaty Fisheries

First Nations fisheries for chum were not restricted. The preliminary estimated catch by First Nations in the Johnstone Strait area is 18,372 chum salmon.

Recreational Fisheries

Tidal Recreational Fisheries

The marine recreational daily limits for chum are four with a possession limit of eight salmon. Chum opportunities are typically opened at full limits in the Johnstone Strait area, but may be reduced based on run-size estimates of Fraser River chum, which compose the majority of the chum caught in this area. Peak participation in the recreational chum fishery typically occurs over the Thanksgiving weekend, and activity is usually driven by abundance. The total recreational catch in Johnstone Strait area was estimated to be approximately 100 chum this season. The majority of the recreational chum salmon fishing effort and catch occurs in Area 13 which is included in the Strait of Georgia catch estimate.

Non-Tidal Recreational

There are no chum retention fisheries in non-tidal waters in the Johnstone Strait area.

Commercial

Commercial Harvest

The commercial chum fisheries in Johnstone Strait were planned for September 28 to November 1, 2015. The total commercial chum catch from Johnstone Strait during chum directed fisheries is estimated at 492,841 pieces. Area and gear restrictions, including the mandatory use of revival tanks, were in place for commercial chum fisheries. Catch monitoring included requirements for catch reporting and mandatory logbooks.

A description of each fishery is provided below:

Area B Seine

In 2015, there were two commercial seine openings for chum salmon in portions of Areas 12 and 13. The first opening took place on October 5 for twelve hours. The second opening took place on October 19 for 11 hours. The second opening was originally scheduled for ten hours but the fishery was extended an additional one hour due to lower than expected effort in the second opening.

The chum catches for the first and second openings were estimated at 238,415 pieces and 114,087 pieces respectively; for a total catch of 352,502 chum.

Area D Gill net

In 2015, there were three commercial gill net openings for chum salmon in portions of Areas 12 and 13. Each opening was for 41 hours in duration. The first opening was from 16:00 hours on October 2 to 09:00 hours on October 4, the second opening was from 16:00 hours on October 16 to 09:00 hours on October 18, and the third opening was from 16:00 hours on October 25 to 09:00 hours on October 27. Each opening proceeded as planned pre-season.

The estimated chum catches for the three Area D gill net fisheries were 36,809 pieces, 40,639 pieces and 14,347 pieces respectively; for a total estimated catch of 91,795 chum.

Area H Troll

In 2015, the Area H troll ITE demonstration fishery was divided into two fishing periods: September 28 to October 13 (period 1) and October 15 to November 1 (period 2); with a one day closure between the two periods on October 14, and closures during the Area B seine fisheries on October 5 and 19 (except Subarea 13-3). Each licence was initially allocated three boat days during the first fishing period and two boat days during the second fishing period. Initially, boat days could be transferred between licence holders within each fishing period, but not between fishing periods. Fishing was hampered due to severe weather on October 9th and 10th, so it was decided that a maximum of one boat day per licence could be transferred from fishing period 1 into fishing period 2.

The catch for the first fishing period was 31,337 chum, and 17,207 chum for the second fishing period, for a total catch of 48,544 chum. Total effort for the Johnstone Strait fishery was 250 boat days; 126 in period 1 and 124 in period 2. Commercial catches and allocation are outlined in Table 49 and 50.

Table 49. - Johnstone Strait Commercial Catch and Effort by Date and Gear Type.

Gear Type	Fishery Dates	Effort[a]	Catch
B – Seine	Oct 5	85	238,415
	Oct 19	73	114,087
D - Gill net	Oct 2-Oct 4	148	36,809
	Oct 16-Oct 18	168	40,639
	Oct 25-Oct 27	112	14,347
H – Troll	Sep 28-Oct 13	126	31,337
	Oct 15-Nov 1	124	17,207

a Number of vessels for seine and gill net, and boat days for troll.

Table 50. - Johnstone Strait Fisheries Catch and Allocation

Gear Type	Total Catch	% of catch	J.S. Allocation Plan
Area B	352,502	71.5%	77%
Area D	91,795	18.6%	17%
Area H	48,544	9.8%	6%
Total Catch:	**492,841**		

First Nation Commercial Harvest

There was no First Nation commercial harvest targeting chum in Johnstone Strait in 2015.

Excess Salmon to Spawning Requirements (ESSR) Fisheries

There are no ESSR fisheries in Johnstone Strait targeting chum in 2015.

Fraser River Chum

Objectives and Overview

Chum salmon return to the Fraser River from September through December, with the typical peak of migration through the lower river occurring from mid to late-October. Spawning locations are predominately located in the Fraser Valley downstream of Hope, B.C., with major spawning aggregations occurring within the Harrison River (including Weaver Creek and Chehalis River), the Stave River, and the Chilliwack River. No spawning locations have been identified upstream of Hells Gate.

The escapement objective for Fraser River chum is 800,000. Since 2001, this objective has been achieved in all but two years. Escapements in 2009 and 2010 did not meet the escapement goal, with approximately 460,000 and 550,000 returning to spawn in those years, respectively.

General Overview of Fisheries

Fraser River chum are typically harvested in Johnstone Strait, the Strait of Georgia, U.S. waters of Area 7 and 7A, and in the Fraser River.

Within the Fraser River area, chum directed fisheries include: First Nations FSC fisheries; recreational fisheries; and commercial fisheries. In recent years, significant conservation measures have been implemented in-river during the Fraser River chum migration period, in order to protect co-migrating stocks of concern (including Interior Fraser coho and Interior Fraser steelhead). Depending on the fishery, these measures have included both time and area closures, as well as gear restrictions. These conservation measures have restricted Fraser River commercial chum fishing opportunities in recent years.

Catch data from all chum fisheries can be found in Table 59.

Stock Status

The number of adult chum returning to the Fraser River each fall is estimated in-season with a Bayesian model based on Albion test fishing catch.

For fishery planning purposes, DFO provided a provisional in-season update on October 20 of 1.567 M chum. This estimate assumed that the peak date of the run was no later than October 21.

A subsequent estimate of Fraser River chum abundance was provided on October 22. The estimated terminal return on that date was 1.78 M (80% probability interval of 1.01 to 2.70 M), with a 50% migration date through the lower river of October 24th. This peak date is later than that observed in recent years (average peak date from 1997-2012 is October 18).

Additional in-season estimates were not provided, as subsequent test fishing information was consistent with a run size of 1.78 M.

Fraser River chum salmon return to numerous spawning locations in the lower Fraser River and its tributaries. Spawning escapement for Fraser River chum salmon is currently assessed for four of the six largest chum producing systems, as well as for a number of smaller tributaries. The largest observed escapement of Fraser River chum (greater than 3 M fish), was seen in 1998. However, since 1998, Fraser Chum salmon escapement, for the annually assessed systems, trended downward to a low in 2010. The escapement decline was halted and reversed with an estimated 1.1 M spawners reported in 2011. Spawning escapement has remained stable through 2014 (2012-2014 estimated escapement averaged 1.2 M spawners).

Current year escapement assessment programs are still ongoing, and preliminary estimates of escapement are not available. However, lower Fraser River harvest estimates and observations of spawners to-date seem consistent with the lower range of the 2015 Albion-based in-season 80% probability interval of 1.01 to 2.70 M chum salmon.

Fisheries

First Nations Food Social and Ceremonial and Treaty Fisheries

FSC gill net fisheries commenced October 3 (below Mission) and October 9 (above Mission), following closures to protect co-migrating Interior Fraser River coho. The estimated catch from the FSC fisheries below Sawmill Creek was 36,273.

Recreational Fisheries

In 2015, some of the major Fraser River watershed recreational salmon fisheries impacting chum salmon were assessed, including significant salmon fisheries occurring in the lower Fraser River mainstem and the Chilliwack River (a tributary to the Fraser River in the lower Fraser Valley).

The lower Fraser River mainstem recreational fishery was open to the retention of chum salmon from September 5 to December 31 (with a daily limit of two). In 2015, this mainstem fishery was assessed from September 5 to September 30. Similar to 2014, this assessment was truncated in October (from 2007 through 2012, this recreational fishery was assessed to October 15 in all years, and November 30 in 2007 and 2012). Preliminary estimates of kept and released chum salmon are 55 and 17, respectively. Fraser mainstem catch estimate analysis is ongoing and complete results are not available at this time.

The Chilliwack River recreational fishery was open to the retention of chum salmon from July 1 to December 31 (with a daily limit of one). This Chilliwack River fishery was assessed from September 15 to November 15 in 2015; catch estimate analysis is ongoing and Chilliwack results are not available at this time.

The Harrison River, Stave River and Nicomen Slough recreational fisheries were open to the retention of chum salmon year round (daily limit of two). In 2015, no assessment was conducted on the Harrison River or Stave River fisheries. The Nicomen Slough fishery was assessed from October 9 to November 6; catch estimate analysis is ongoing and Nicomen results are not available at this time.

Commercial

Commercial Harvest

Test Fishery

The Fraser River chum test fishery at Albion operated every other day from September 1 until October 19, alternating days with the Albion chinook test fishery. From October 21 until November 12, the chum net fished every day, and then every other day from November 13 until November 23. In 2015, the total number of chum harvested during the Albion chum test fishery was 8,603, and an additional 1,728 pieces were harvested during the Albion chinook test fishery.

Area E

Commercial fisheries in the lower Fraser River (below Mission) remained closed during the Interior Fraser River coho window closure, and further closures were in place until later in October to meet the Interior Fraser steelhead management objective. Two Area E Gill Net commercial openings took place in the Fraser River (Area 29) during the 2015 chum season, consisting of a ten hour fishery on October 23 and a ten hour fishery on October 27, for a total estimated harvest of 125,463 chum salmon retained and 67 chum salmon released.

There were no Area E fisheries for Fraser sockeye or pink in 2015 and therefore there is no by-catch retention of chum salmon to report.

Area B

Area B seine was also provided a limited opportunity in Area 29 that took place on October 27 and 28 for a total estimated harvest of 4,513 chum salmon retained and 0 chum released.

Area B seine had a one day limited participation Fraser River pink assessment fishery in Area 29 and no by-catch retention of chum was reported.

Area H

Area H was provided an opportunity in Area 29 that took place from October 22 to October 30 with a total estimated harvest of less than 30 chum retained and 0 chum released.

First Nation Commercial Harvest

Fraser River First Nations commercial chum fisheries for gill net and beach seine were conducted between October 22 and November 7. There were 122,309 chum salmon harvested in economic opportunity, harvest agreement and First Nation commercial demonstration fisheries

Excess Salmon to Spawning Requirements (ESSR) Fisheries

There were several ESSR chum fisheries in the Lower Fraser Area for First Nations. These were conducted at Chehalis, Chilliwack, and Inch Creek Hatcheries for a total chum catch of 15,666. Capilano, Tenderfoot, and Weaver Creek Hatcheries reported no chum harvest for ESSR in 2015.

Strait of Georgia Chum

Objectives and Overview

Strait of Georgia chum fisheries consist of terminal opportunities for chum returning to their natal spawning streams. Many of the potential terminal fishing areas have enhancement facilities and/or spawning channels associated with the rivers. Terminal fishery strategies consist of monitoring and assessing stocks (escapement and returning abundance), with the objective of ensuring adequate escapement and providing harvest opportunities where possible. Stock assessments may include test fisheries, escapement enumeration and over flights. In some areas where stocks receive considerable enhancement or where stocks have above average productivity, limited fishing may occur prior to major escapement occurring.

A productivity analysis was conducted in 2014 in order to review escapement targets in the major chum systems of the Strait of Georgia. The results of this analysis have led to new interim escapement targets in Big Qualicum, Little Qualicum and Nanaimo Rivers.

Stock Status

Historically, chum returns have been highly variable relative to brood year escapements. For 2015, the forecast for Jervis Inlet chum abundance was below the target level, the Cowichan was forecast to be around the target level (ranging from below to above), and the Mid-Island systems, Nanaimo River and Goldstream chum abundance, were forecast to be above the target level but highly uncertain.

Conditions for returning chum migration and spawning were marginal at the beginning of the migration period in October, but rain events in mid-October and throughout November increased water levels so that migration was unimpeded. Monitoring programs to assess spawning escapements of chum are mostly completed now and data are currently being compiled. To date, returns for the Jervis Inlet systems, Cowichan and the Mid-Island systems were below the expected range and did not reach the target escapements (Table 51). The Nanaimo and Goldstream chum abundances were just below the lower expected range but exceeded escapement targets (Table 51).

Table 51. - Strait of Georgia Chum Preliminary Spawning Escapements

	Target Escapement Target	2015 forecast Expected range	Preliminary 2015 Escapement	% of target
Jervis Inlet	110K	50K – 75K	30K	27%
Mid-Island	240K	280K – 420K	172K	72%
Puntledge	*60K*		*37K*	*62%*
Little Qualicum	*85K (interim)*		*72K*	*85%*
Big Qualicum	*85K (interim)*		*63K*	*74%*
Nanaimo	40K *(interim)*	65K – 98K	61K	152%
Cowichan	160K	140K – 209K	120K	75%
Goldstream	15K	39K – 59K	34K	226%

Fisheries

First Nations Food Social and Ceremonial and Treaty Fisheries

The preliminary estimated FSC catch by First Nations in the Strait of Georgia is estimated to be approximately 6,416 chum.

Recreational Fisheries

Tidal Recreational

Marine recreational chum fisheries are subject to the normal salmon daily and possession limits (limit of four per day and possession of eight), and are typically open throughout the area. The majority of the recreational effort directed at chum salmon in the Strait of Georgia occurs in the lower portions of the Discovery Passage area, particularly in the waters around Campbell River. The annual Brown's Bay chum derby which took place on the weekend of October 24-25 is usually the most active chum recreational fishery in the area. A marine accident cancelled the derby in 2015 and the chum catch during the derby was minimal.

Marine chum fisheries also occur in the approach waters of the Puntledge, Qualicum, Nanaimo and Cowichan Rivers on Vancouver Island, as well as in Howe Sound. Marine recreational catch for the Strait of Georgia was estimated from the creel survey to be 1,721 chum.

Non-tidal recreational

Chum retention fisheries in the Strait of Georgia took place in 2015 in the Cowichan, Nanaimo, Qualicum, Little Qualicum and the Puntledge Rivers on Vancouver Island. Recreational freshwater opportunities are typically based on escapement estimates from hatchery operations, and where escapement goals are expected to be met, opportunities are provided. Daily and possession limits are typically half of those provided in marine waters, with daily limits on most rivers being 2/day and 4 in possession. Catch monitoring programs did not take place in 2015 on these systems. Chum catch and effort from these freshwater fisheries is expected to be minimal.

Commercial

Commercial Harvest

Strait of Georgia commercial chum fisheries for troll, gill net and seine were conducted in Areas 14, 17, 18 and 19 between October 29 and November 18. The total commercial chum catch from the Strait of Georgia is estimated at 236,097 pieces (see Table 52 below). A description of each fishery is provided in the following table.

Chum catch and release information from all fisheries can be found in Table 59.

Table 52.- Strait of Georgia Commercial Chum Catch by Date and Gear Type

Fishery Date	Gear type	Area	Effort (boat days)	Catch
Oct 29-Nov 18	GN	17	258	18,133
Nov 2-4	GN	14	203	12,812
Nov 2 and 3	TR	14	2	<10
Nov 5-Nov 18	SN	17	6	176
Nov 7	GN	18	78	22,117
Nov 11	SN	18	37	182,857

First Nations Commercial Harvest

There was no First Nation commercial harvest targeting chum in the Strait of Georgia in 2015.

Excess Salmon to Spawning Requirements (ESSR) Fisheries

An ESSR occurred at the Community Economic Development Program (CEDP) hatchery on the Cowichan River. The total harvested was 16,400 chum salmon.

An ESSR Licence was issued for chum, coho and chinook at the Big Qualicum River hatchery, which resulted in the harvest of 15 chum.

West Vancouver Island Chum

Objectives and Overview

Commercial chum salmon fisheries normally occur on the WCVI from late September to early November in years of chum abundance. The majority of chum fishing on WCVI takes place adjacent to Nitinat Lake (Area 21), in Nootka Sound, Tlupana and Esperanza Inlets (Area 25). In some recent years there have been limited-fleet gill net fisheries in Barkley Sound (Area 23), Clayoquot Sound (Area 24), Nootka Sound and Esperanza Inlet (Area 25).

Fisheries for WCVI chum employ a two-tiered strategy for controlling removals: either a constant harvest rate strategy or a surplus-to-escapement goal strategy.

Fixed Harvest Rate Strategy (fisheries targeting natural origin stocks, hatchery stocks at low abundance):

For those fisheries where a significant component of the target stock is from naturally spawning populations, a constant harvest rate strategy of 10-20% is implemented. The maximum harvest rate is set a precautionary level relative to stock-recruit derived optimal exploitation rates for WCVI chum; which are in the order of 30-40%. This approach allows limited harvest while protecting the biodiversity of chum stocks and permitting rebuilding when the population is low. In areas of low quality data or only naturally spawning stocks, including Barkley (Area 23), Clayoquot (Area 24), Esperanza Inlet (Area 25) and Kyoquot Sound (Area 26), the maximum allowable harvest rate is 10 to 15%. In Nootka Sound, up to 20% harvest is permitted given the prevalence of hatchery stock in the area. The harvest rate is controlled by limiting effort (i.e. number and duration of openings and, in some areas, the number of permitted vessels) and limiting fishing areas to approach areas only (i.e. to those areas where fish are migrating not holding).
Note: since 2013, a fixed harvest rate strategy has also been used to harvest Nitinat Hatchery chum when the stock abundance is considered above the lower fishery reference point but below the target fishery reference point. The maximum harvest rate for the Nitinat stock is 25% when it is below the target fishery reference point.

Surplus-to-Escapement Goal Strategy (fisheries targeting hatchery stocks at high abundance):

For fisheries that target primarily hatchery surpluses, the allowable harvest rate may be determined by the escapement goal when it is determined the stock is abundant (e.g. it is established that escapement is above the target reference point for fisheries). These fisheries occur only in 'terminal areas', defined as an area in close proximity to the origin watershed of the target stock where little or no interception of other stocks occurs. Surplus to escapement goal fisheries for Conuma Hatchery stock occur within the Tlupana Inlet portion of Area 25. Surplus to escapement goal fisheries for Nitinat Hatchery stock occur in Area 21 near the mouth of Nitinat Lake or in Area 22 in Nitinat Lake. All Nitinat (and Conuma) hatchery chum are thermally marked, which allows for assessment of the hatchery contribution to fisheries and spawning.

Stock Status

The current stock status is considered poor. Over the last three brood cycles, naturally spawning populations have been below target abundance in many years despite the precautionary harvest regime. In addition, hatchery production levels have declined in recent years partially as a result of low abundance (i.e. hatcheries have not been able to achieve brood-stock targets in some years). Therefore, in recent years, overall catches have declined relative to historic levels. There was some improvement observed for the Nitinat Hatchery stock in 2015.

Fisheries

First Nations Food Social and Ceremonial and Treaty Fisheries

Somass First Nations FSC catch was 842 chum. Maa-nulth domestic harvest was reported as 3 chum. The remaining WCVI NTC First Nations harvest was 1,401 chum. The total combined catch for the WCVI First Nations was 2,246 chum.

Recreational Fisheries

Tidal Recreational

The WCVI recreational fishery is open year-round with a daily limit of four and possession of eight chum. Anglers are restricted to the use of barbless hooks and there is a minimum size limit of 30 cm. In both offshore and inshore areas of WCVI, recreational catch of chum is very low (estimated at less than 100 for all areas combined).

Non-tidal recreational

Chum retention fisheries took place in the Nitinat River on Vancouver Island (October 15-Dec 31). Recreational freshwater opportunities are typically based on escapement estimates from hatchery operations, and where escapement goals are expected to be met, opportunities are provided. Chum returns to the WCVI were generally low in most systems in 2015, and as a result recreational freshwater opportunities weren't available. Daily and possession limits are typically half of those provided in marine waters, with daily limits on most rivers being two per day and four in possession. Catch monitoring programs did not take place in 2015 on this river system. Chum catch and effort from this fishery is expected to be minimal.

Commercial

Commercial Harvest

There were two commercial fisheries on the WCVI that targeted chum in 2015: Nitnat gill net and seine, and Nootka gill net.

Nitinat

In 2015 the fishery started with a limited entry assessment fishery consisting of 20 gill net vessels. The fishery was designed to simulate a commercial style fishery and the CPUE in comparison to previous years was used to determine run size. This fishery occurred on September 28 and 29. The assessment fishery results suggested a run size larger than the pre-season forecast which allowed for full fleet fisheries for both gill net and seine. These fisheries occurred over the next four weeks. Area B seine caught 58,580 chum and Area E gill nets caught 110,535 chum.

Nootka

A limited effort gill net chum fishery occurred in Nootka Sound in 2015. Effort was limited to a maximum of four vessels fishing two days per week. The total catch for the Area D gill nets was 1,428 chum.

First Nation Commercial Harvest

In 2015, an agreement was reached with First Nations for an economic opportunity fishery targeting chum (Area 23). The pre-season forecast was 17,000 which was below the lower reference point of 45,000 and no commercial surplus was identified in-season, therefore there was no economic opportunity fishery for chum in 2015.

In 2015 the Department authorized ISBM and AABM chinook salmon demonstration fisheries for the T'aaq-wiihak Nations that allowed the retention of chum by-catch. Less than 10 chum were sold in the T'aaq-wiihak salmon demonstration fishery and they were all from the ISBM fishery.

Excess Salmon to Spawning Requirements (ESSR) Fisheries

An ESSR for chum at Nitinat Lake and Nitinat hatchery occurred in 2015. The catch was 20,140 in the lake and 47,721 from brood capture. The total catch for these fisheries was 67,861 chum.

Table 53. - Catches in Canadian Treaty Limit Fisheries, 1996 to 2015 (Preliminary)

Fisheries/Stocks	Species	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996
Stikine River (all gears)	Sockeye	60,046	42,869	36,140	30,352	55,623	50,543	48,049	33,614	59,237	101,209	85,890	84,866	58,784	17,294	25,600	27,468	38,055	43,803	65,559	74,281
	Coho	5,619	4,992	4,835	5,748	4,703	4,952	5,061	2,398	47	72	276	275	190	82	233	301	181	726	401	1,404
	Chinook-lg	4,157	3,308	3,419	4,573	2,307	1,766	2,330	7,860	10,576	15,776	18,997	3,857	1,396	1,362	1,480	3,086	2,916	2,164	4,483	2,471
	Chinook-sk	1,537	780	1,904	1,213	1,165	1,001	714	1,067	1,735	2,078	2,177	2,574	1,052	578	103	628	1,264	423	286	421
Taku River (commercial gill net)	Sockeye	19,747	17,872	21,163	30,209	24,012	20,211	11,057	19,445	16,564	21,093	21,932	19,860	32,730	31,053	47,660	28,009	20,681	19,038	24,003	41,665
	Coho	7,886	14,568	10,374	8,689	6,102	10,349	5,649	4,866	5,399	9,180	6,860	5,954	3,168	3,082	2,568	4,395	4,416	5,090	2,594	5,028
	Chinook-lg	808	2,172	738	1,909	2,333	4,658	7,031	1,184	862	7,312	7,534	2,074	1,894	1,561	1,458	1,576	908	1,107	2,731	3,331
	Chinook-sk	0	657	N/A	478	514	697	1,183	330	337	198	821	334	547	291	118	87	257	227	84	144
Alsek River (all gear)	Sockeye	1,084	1,140	508	1,786	2,110	1,716	717	0	1,340	1,327	594	2,122	2,795	2,255	1,177	745	554	585	520	1,361
	Coho	0	0	29	N/A	29	7	3	34	1	0	71	127	192	289	99	52	28	112	5	65
	Chinook	87	90	73	85	214	294	125	7	41	19	114	185	228	2,194	277	142	412	346	530	1,098
Areas 3 (1-4)* (commercial net)****	Pink	80,266	430,671	1,249,570	118,164	160,757	30,686	404,460	8,330	1,740,270	228,378	878,552	402,459	667,103	876,631	473,318	127,000	2,162,280	61,000	329,000	987,000
Area 1 (commercial troll)****	Pink	41,551	31,775	84,216	57,013	52,221	19,948	60,402	29,295	61,276	34,854	39,430	27,751	98,347	41,418	175,000	28,295	25,000	0	261,000	732,000
North Coast** (troll + sport)	Chinook	158,903 106,703 + 52,200	221,001 172,001 + 49,000	115,914 69,264 + 46650	120,305 80,256 + 40050	122,660 74,660 + 48000	136,613 90,213 + 46400	109,470 75,470 + 34,000	95,647 52,147 + 43500	144,235 83,235 + 61000	215,985 151,485 + 64500	243,606 174,806 + 68,800	241,508 167,508 + 74,000	191,657 137,357 + 54,300	150,137 103,037 + 47,100	43,500	32,048	70,701	144,650	145,568	26,900
West Coast Vancouver Island (troll + sport + FN)	Chinook	113,293 60,572 + 48,775 + 3,946	178,556 127,177 + 48,365 + 3,655	108,710 43,043 + 61,712 + 3955	130,719 62,573 + 61,822 + 4300	206,569 123,930 + 78,350 + 4289	137,660 79,123 + 52,698 + 5839	125,488 53,191 + 68,775 + 3381	143,817 89,704 + 50,319 + 3794	139,150 87,921 + 46,229 + 5,000	145,970 103,978 + 36,992 + 5,000	195,791 143,614 + 52,177	210,875 168,837 + 42,038	179,706 152,677 + 27,029	165,824 134,308 + 31516	102,266 78,302 + 23964	89,139 64,216 + 24923	28,540 6,906 + 21634	10,855 6,678 + 4177	59,796 53,396 + 6400	3677 4 + 3673
Fraser River Canadian Commercial Catch	Sockeye	0	7,945,474	2,124	0	443,000	9,305,104	0	16,942	0	4,633,623	137,000	1,993,800	1,042,986	2,182,700	295,000	953,000	54,000	1,295,000	8,737,000	1,019,000
	Pink	852	0	2,855,441	0	4,751,800	0	1,442,840	0	333,300	68,325	338,000	0	1,149,189	0	579,000	0	3,000	0	3,660,000	0
Fraser River U.S. Commercial Catch	Sockeye	44,100	601,100	4,600	105,100	266,000	1,970,000	0	49,800	3,900	701,300	0	192,200	214,000	434,600	240,000	494,000	41,000	707,000	1,578,000	257,000
	Pink	334,700	0	3,057,222	0	2,893,400	0	2,726,230	0	377,600	0	0	0	773,000	0	427,000		3,000	0	1,565,000	0
West Coast Vancouver Island (commercial troll)	Coho	18,126	32,992	5,490	1,988	0	458	0	369	1,424	2,399	5,989	0	0	0	0	0	0	0	0	761,000
Johnstone Strait (commercial catch)***	Chum	492,841	318,064	507,403	301,324	751,560	62,510	510,708	298,931	494,944	800,363	787,226	1,089,100	1,026,029	700,000	236,000	161,000	41,411	1,820,000	104,593	101,971

*AREA 5-11 CATCHES INCLUDED PRIOR TO 1995 AND EXCLUDED FROM 1995-1998 INCLUSIVE. NOT PART OF 1999 ANNEX IV PROVISIONS.

** NORTH COAST CATCH EXCLUDES TERMINAL EXCLUSION CATCHES OF 6,000 ('91), 6,100 ('92), 7,400 ('93), 6,400 ('94), 1,702 ('95), 16,000 ('96), 5,943 ('97), and 2,182 in 1998. NO TERMINAL EXCLUSION IN THE 1999 AGREEMENT - COVERED UNDER THE AABM ARRANGEMENT; CENTRAL COAST AREAS NOT PART OF 1999 ANNEX IV PROVISIONS.

*** CANADIAN CATCH INCLUDES COMMERCIAL, FSC AND TEST-FISH CATCHES IN AREAS 11-13 FOR 1991-94 INCLUSIVE, AND IN AREAS 12-13 FOR 1995 TO 2004 INCLUSIVE. 2005-PRESENT, CATCHES FROM FISHERIES MANAGED TO FIXED HARVEST RATE OF 20%.

****ALL PINK CATCHES FOR ALL YEARS (1995-2012) IN AREAS 3(1-4) AND AREA 1 HAVE BEEN UPDATED TO REFLECT FINAL ESTIMATES.

NOTE 1: WCVI CHINOOK CATCHES FROM 1995-1998 ARE REPORTED BY CALENDAR YEAR; CATCHES FROM 2008-1999 ARE REPORTED BY CHINOOK YEAR (OCT-SEPT)

NOTE 2: 1999 CATCHES ARE REPORTED ACCORDING TO FISHERIES/STOCKS UNDER THE 1999 ANNEX IV PROVISIONS.

Table 54. - Preliminary 2015 South Coast AABM Chinook Catch by Fishery and Area

AABM Chinook

PST Regime	Fishery	Month	Numbers	
			Kept	Released
WCVI-AABM Commercial	Area G Troll *	Oct-14	213	92
		Nov-14	56	34
		Dec-14	0	0
		Jan-15	186	33
		Feb-15	612	187
		Mar-15	731	132
		Apr-15	3,841	232
		May-15	27,405	1,159
		Jun-15		
		Jul-15		
		Aug-15	13,953	156
		Sep-15	7,341	412
First Nations Commercial Harvest	Taaq-wiihak	May - Sep	6,234	996
Total			**60,572**	**3,433**

Recreational	Sport	WCVI - Inshore (20W-27)	7,215	4,051
	Sport	WCVI - Offshore (121-127)	41,560	24,279
Total			**48,775**	**28,330**

First Nations FSC and Treaty	Johnstone Strait	0	0
	Strait of Georgia	0	0
	WCVI Offshore	3,946	0
	WCVI Inshore	0	0
	Fraser River	0	0
Total		**3,946**	**0**

All Total	**113,293**	**31,763**

Table 55. - Preliminary 2015 South Coast ISBM Chinook Catches by Fishery and Area

ISBM CHINOOK

Fishery	Gear	Fishery (Area)	Numbers	
			Kept	Released
Commercial	Area G Troll	WCVI Chinook	0	0
	Area H Troll	Fraser Sockeye (12,13)	0	0
	Area H Troll	Fraser Sockeye (29)	0	0
	Area H Troll	Fraser Pink (12, 13, 29)	0	0
	Area H Troll	JST Chum (12,13)	0	19
	Area H Troll	Fraser Chum (29)	0	0
	Area H Troll	MM Chum (14)	0	0
	Area B Seine	Barkley Sockeye (23)	0	148
	Area B Seine	Fraser Sockeye (12,13)	0	0
	Area B Seine	Fraser Sockeye (16)	0	0
	Area B Seine	Fraser Sockeye (29)	0	0
	Area B Seine	Mainland Pink (12, 13, 16)	0	7
	Area B Seine	Howe Sound Pink (28)	0	17
	Area B Seine	Fraser Pink (12, 13, 29)	0	21
	Area B Seine	Nitinat Chum (21, 121)	0	0
	Area B Seine	JST Chum (12,13)	4	38
	Area B Seine	Fraser Chum (29)	0	0
	Area B Seine	MM Chum (14-19)	0	2
	Area D Gillnet	Barkley Sockeye (23)	0	0
	Area D Gillnet	Barkley Chum (23)	0	0
	Area D Gillnet	Somass Chinook (23)	438	9
	Area D Gillnet	Clayoquot Chum (24)	0	0
	Area D Gillnet	Tlupana Chinook (25)	9,615	1
	Area D Gillnet	Nootka Chum (25)	0	0
	Area D Gillnet	Fraser Sockeye (11,12,13,14)	0	0
	Area D Gillnet	JST Chum (12,13)	0	22
	Area D Gillnet	MM Chum (14)	0	0
	Area E Gillnet	Fraser Sockeye (29)	0	0
	Area E Gillnet	Fraser Chum (29)	104	129
	Area E Gillnet	Nitinat Chum (21, 121)	0	5
	Area E Gillnet	MM (Area 17-19)	0	2
Commercial Harvest Total			**10,161**	**420**
First Nations Commercial	Taaq-wiihak HA	WCVI ISBM Chinook (25)	1,032	0
	Taaq-wiihak HA	WCVI AABM Chinook (24-26, 124-126)	0	0
	Maa-nulth HA	Henderson Sockeye (23)	0	0
	Harvest Agreement	Fraser River	0	0
	EO	Johnstone Strait	0	0
	EO	Strait of Georgia	0	0
	EO	WCVI	6,692	0
	EO	Fraser River	22	606
	Demo	Johnstone Strait	0	0
	Demo	Strait of Georgia	0	0
	Demo	WCVI	0	0
	Demo	Fraser River	2,493	875
First Nations Commercial Total			**10,239**	**1,481**
Total Combined Commercial Catch			**20,400**	**1,901**
Recreational	Sport	Juan de Fuca (19,20)	30,558	20,913
	Sport	Strait of Georgia (13-19,28,29)	51,483	36,655
	Sport	Johnstone Strait (11-12)	12,127	9,138
	Sport	WCVI - Inshore (20W-27)	31,753	14,877
	Sport	Fraser River	13,186	1,702
Total Recreational Catch			**139,107**	**83,285**
First Nations FSC and Treaty		Johnstone Strait	261	4
		Strait of Georgia	4	0
		WCVI	2,019	0
		Fraser River	23,712	163
Total First Nations FSC Catch			**25,996**	**167**
ESSR		Johnstone Strait	0	0
		Strait of Georgia*	1,209	0
		WCVI	31,581	0
		Fraser River	8,752	0
Total First Nations ESSR Catch			**41,542**	**0**
TOTAL - ALL FISHERIES			**227,045**	**85,353**

Table 56. - Preliminary 2015 South Coast Sockeye Catch by Fishery and Area

SOCKEYE*

			Numbers			
Fishery	**Gear**	**Fishery (Area)**	**Non-Fraser Kept**	**Unknown Origin**	**Fraser Kept**	**All Stocks Released**
Commercial	Area G Troll	WCVI AABM Chinook (23-27, 123-127)	0	0	0	2
	Area H Troll	Fraser Sockeye (12,13)	0	0	0	0
	Area H Troll	Fraser Sockeye (29)	0	0	0	0
	Area H Troll	Fraser Pink (12, 13, 29)	0	0	0	0
	Area H Troll	JST Chum (12,13)	0	0	0	8
	Area H Troll	Fraser Chum (29)	0	0	0	0
	Area H Troll	MVI Chum (14)	0	0	0	0
	Area B Seine	Barkley Sockeye (23)	536,003	0	0	4,744
	Area B Seine	Fraser Sockeye (12,13)	0	0	0	0
	Area B Seine	Fraser Sockeye (16)	0	0	0	0
	Area B Seine	Fraser Sockeye (29)	0	0	0	0
	Area B Seine	Mainland Pink (12, 13,16)	0	0	0	11
	Area B Seine	Howe Sound (28)	0	0	0	1
	Area B Seine	Fraser Pink (12, 13, 29)	0	0	0	0
	Area B Seine	Nitinat Chum (21, 121)	0	0	0	0
	Area B Seine	JST Chum (12,13)	0	10	0	23
	Area B Seine	Fraser Chum (29)	0	0	0	0
	Area B Seine	MVI Chum (14-19)	0	0	0	0
	Area D Gillnet	Barkley Sockeye (23)	329,381	0	0	42
	Area D Gillnet	Barkley Chum (23)	0	0	0	0
	Area D Gillnet	Somass Chinook (23)	124	0	0	2
	Area D Gillnet	Clayoquot Chum (24)	0	0	0	0
	Area D Gillnet	Tlupana Chinook (25)	0	0	0	0
	Area D Gillnet	Nootka Chum (25)	0	0	0	0
	Area D Gillnet	Fraser Sockeye (11,12,13,14)	0	0	0	0
	Area D Gillnet	JST Chum (12,13)	0	1	0	2
	Area D Gillnet	MVI Chum (14)	0	0	0	0
	Area E Gillnet	Fraser Sockeye (29)	0	0	0	0
	Area E Gillnet	Fraser Chum (29)	0	0	0	4
	Area E Gillnet	Nitinat Chum (21, 121)	0	0	0	0
	Area E Gillnet	MVI Chum (Area 17-19)	0	0	0	0
Commercial Harvest Total			**865,508**	**11**	**0**	**4,839**
First Nations Commercial	T'aaq-wiihak HA	WCVI ISBM Chinook (25)	0	0	0	0
	T'aaq-wiihak HA	WCVI AABM Chinook (24-26, 124-126)	0	0	0	3
	Maa-nulth HA	Henderson Sockeye (23)	0	0	0	0
	Harvest Agreement	Fraser River	0	0	0	0
	EO	Johnstone Strait	0	0	0	0
	EO	Strait of Georgia	0	0	0	0
	EO	WCVI	309,531	0	0	0
	EO	Fraser River	0	0	6	299
	Demo	Johnstone Strait	0	0	0	0
	Demo	Strait of Georgia	0	0	0	0
	Demo	WCVI	0	0	0	0
	Demo	Fraser River	0	0	2	552
First Nations Commercial Total			**309,531**	**0**	**8**	**854**
Total Combined Commercial Catch			**1,175,039**	**11**	**8**	**5,693**
Recreational	Sport	Juan de Fuca (19,20)	0	212*	0	1,323
	Sport	Strait of Georgia (13-19,28,29)	0	84*	0	2,991
	Sport	Johnstone Strait (11-12)	0	14*	0	100
	Sport	WCVI - Inshore (20W-27)	88,232	0	0	646
	Sport	WCVI - Offshore (121-127)	0	225	0	63
	Sport	Fraser River	0	0	37	4,169
Total Recreational Catch			**88,232**	**225**	**37**	**9,292**
First Nations FSC and Treaty		Johnstone Strait	1,632	0	39,847	0
		Strait of Georgia	0	0	0	0
		WCVI	39,390	0	4	0
		Fraser River	0	0	143,248	5,494
Total First Nations FSC and Treaty Catch			**41,022**	**0**	**183,099**	**5,494**
ESSR		Johnstone Strait	0	0	0	0
		Strait of Georgia	0	0	0	0
		WCVI	793	0	0	[illegible]
		Fraser River	0	0	0	0
ESSR Catch			**793**	**0**	**0**	**0**
TOTAL - ALL FISHERIES			**1,305,086**	**236**	**183,144**	**20,479**

*Fraser/Non-Fraser stock compositions are not final

Table 57. - Preliminary 2015 South Coast Pink Catch by Fishery and Area

PINK

Fishery	Gear	Fishery (Area)	Numbers	
			Kept	Released
Commercial	Area G Troll	WCVI AABM Chinook (23 - 27, 123 - 127)	25	46
	Area H Troll	Fraser Sockeye (12,13)	0	0
	Area H Troll	Fraser Sockeye (29)	0	0
	Area H Troll	Fraser Pink (12, 13, 29)	0	0
	Area H Troll	JST Chum (12,13)	24	12
	Area H Troll	Fraser Chum (29)	0	0
	Area H Troll	MM Chum (14)	0	0
	Area B Seine	Barkley Sockeye (23)	1	9
	Area B Seine	Fraser Sockeye (12,13)	0	0
	Area B Seine	Fraser Sockeye (16)	0	0
	Area B Seine	Fraser Sockeye (29)	0	0
	Area B Seine	Mainland Pink (12, 16)	95,198	0
	Area B Seine	Howe Sound Pink (28)	136,964	0
	Area B Seine	Fraser Pink (12, 13, 29)	0	27
	Area B Seine	Nitinat Chum (21, 121)	0	0
	Area B Seine	JST Chum (12,13)	145	4
	Area B Seine	Fraser Chum (29)	0	0
	Area B Seine	MM Chum (14-19)	0	0
	Area D Gillnet	Barkley Sockeye (23)	174	41
	Area D Gillnet	Barkley Chum (23)	0	0
	Area D Gillnet	Somass Chinook (23)	0	0
	Area D Gillnet	Clayoquot Chum (24)	0	0
	Area D Gillnet	Tlupana Chinook (25)	0	0
	Area D Gillnet	Nootka Chum (25)	0	0
	Area D Gillnet	Fraser Sockeye (11,12,13,14)	0	0
	Area D Gillnet	JST Chum (12,13)	114	4
	Area D Gillnet	MM Chum (14)	0	0
	Area E Gillnet	Fraser Sockeye (29)	0	0
	Area E Gillnet	Fraser Chum (29)	2	4
	Area E Gillnet	Nitinat Chum (21, 121)	2	0
	Area E Gillnet	MM Chum (Area 17-19)	0	0
Commercial Harvest Total			**232,649**	**147**
First Nation Commercial	T'aaq-wiihak	WCVI ISBM Chinook (25)	0	0
	T'aaq-wiihak	WCVI AABM Chinook (24 - 26, 124 - 126)	0	877
	Maa-nulth HA	WCVI	0	0
	Harvest Agreement	Fraser River	0	0
	EO	Johnstone Strait	0	0
	EO	Strait of Georgia	0	0
	EO	WCVI	0	0
	EO	Fraser River	452	31
	Demo	Johnstone Strait	0	0
	Demo	Strait of Georgia	0	0
	Demo	WCVI	0	0
	Demo	Fraser River	38,973	64
Total First Nations EO Catch			**39,425**	**972**
Total Commercial Catch			**272,074**	**1,119**
Recreational	Sport	Juan de Fuca (19,20)	58,104	63,845
	Sport	Strait of Georgia (13-19,28,29)	28,155	17,832
	Sport	Johnstone Strait (11-12)	6,606	7,185
	Sport	WCVI - Inshore (20W-27)	3,551	8,998
	Sport	WCVI - Offshore (121-127)	2,533	9,203
	Sport	Fraser River	12,266	19,746
Total Recreational Catch			**111,215**	**126,809**
First Nations FSC and Treaty		Johnstone Strait	15,285	4,893
		Strait of Georgia	512	0
		WCVI	5	0
		Fraser River	25,585	7,461
Total First Nations FSC Catch			**41,387**	**12,354**
ESSR		Johnstone Strait	153,915	0
		Strait of Georgia	38,536	0
		WCVI	0	0
		Fraser River	0	0
Total First Nations ESSR Catch			**192,451**	**0**
TOTAL - ALL FISHERIES			**617,127**	**140,282**

Table 58. - Preliminary 2015 South Coast Coho Catch by Fishery and Area

COHO

Fishery	Gear	Fishery (Area)	Numbers	
			Kept	Released
Commercial	Area G Troll*	WCVI AABM Chinook (23 - 27, 123 - 127)	16,501	1,883
	Area H Troll	Fraser Sockeye (12,13)	0	0
	Area H Troll	Fraser Sockeye (29)	0	0
	Area H Troll	Fraser Pink (12, 13, 29)	0	0
	Area H Troll	JST Chum (12,13)	0	599
	Area H Troll	Fraser Chum (29)	0	0
	Area H Troll	MM Chum (14)	0	0
	Area B Seine	Barkley Sockeye (23)	0	36
	Area B Seine	Fraser Sockeye (12,13)	0	0
	Area B Seine	Fraser Sockeye (16)	0	0
	Area B Seine	Fraser Sockeye (29)	0	0
	Area B Seine	Mainland Pink (12, 16)	0	63
	Area B Seine	Howe Sound Pink (28)	0	1
	Area B Seine	Fraser Pink (29)	0	5
	Area B Seine	Nitinat Chum (21, 121)	0	83
	Area B Seine	JST Chum (12,13)	576	2,160
	Area B Seine	Fraser Chum (29)	0	51
	Area B Seine	MM Chum (14-19)	0	43
	Area D Gillnet	Barkley Sockeye (23)	266	49
	Area D Gillnet	Barkley Chum (23)	0	0
	Area D Gillnet	Somass Chinook (23)	57	0
	Area D Gillnet	Clayoquot Chum (24)	0	0
	Area D Gillnet	Tlupana Chinook (25)	0	0
	Area D Gillnet	Nootka Chum (25)	12	0
	Area D Gillnet	Fraser Sockeye (11,12,13,14)	0	0
	Area D Gillnet	JST Chum (12,13)	7	1,469
	Area D Gillnet	MM Chum (14)	0	10
	Area E Gillnet	Fraser Sockeye (29)	0	0
	Area E Gillnet	Fraser Chum (29)	4	730
	Area E Gillnet	Nitinat Chum (21, 121)	0	74
	Area E Gillnet	MM Chum (Area 17-19)	0	47
Commercial Harvest Total			**17,423**	**7,303**
First Nations Commercial	T'aaq-wiihak	WCVI ISBM Chinook (25)	7	0
	T'aaq-wiihak	WCVI AABM Chinook (24 - 26, 124 - 126)	574	1,728
	Maa-nulth HA	Henderson Sockeye (23)	0	0
	Harvest Agreement	Fraser River	0	11
	EO	Johnstone Strait	0	0
	EO	Strait of Georgia	0	0
	EO	WCVI	1,044	0
	EO	Fraser River	440	2,291
	Demo	Johnstone Strait	0	0
	Demo	Strait of Georgia	0	0
	Demo	WCVI	0	0
	Demo	Fraser River	86	565
Total First Nations EO Catch			**2,151**	**4,595**
Total Commercial Catch			**19,574**	**11,898**
Recreational	Sport	Juan de Fuca (19,20)	11,083	25,811
	Sport	Strait of Georgia (13-19,28,29)	7,216	27,562
	Sport	Johnstone Strait (11-12)	8,600	4,833
	Sport	WCVI - Inshore (20W-27)	18,091	11,932
	Sport	WCVI - Offshore (121-127)	7,716	17,699
	Sport	Fraser River	23	35
Total Recreational Catch			**52,729**	**87,872**
First Nations FSC and Treaty		Johnstone Strait	486	0
		Strait of Georgia	0	0
		WCVI	1,917	0
		Fraser River	447	118
Total First Nations FSC Catch			**2,850**	**118**
ESSR		Johnstone Strait	0	0
		Strait of Georgia	2,528	250
		WCVI	2,120	0
		Fraser River	11,284	0
Total First Nations ESSR Catch			**15,932**	**250**
TOTAL - ALL FISHERIES			**91,085**	**100,138**

*Area G coho harvest estimate is based on the chinook year (Oct 1, 2014 to Sept 30, 2015). Total coho retained includes 10,422 from 2014 with the remainder in 2015 fisheries.

Table 59. - Preliminary 2015 South Coast Chum Catch by Fishery and Area

Chum

Fishery	Gear	Fishery (Area)	Numbers	
			Kept	Released
Commercial	Area G Troll	WCVI AABM Chinook (23 - 27, 123 - 127)	996	25
	Area H Troll	Fraser Sockeye (12,13)	0	0
	Area H Troll	Fraser Sockeye (29)	0	0
	Area H Troll	Fraser Pink (12, 13, 29)	0	0
	Area H Troll	JST Chum (12,13)	48,544	0
	Area H Troll	Fraser Chum (29)	26	0
	Area H Troll	MM Chum (14)	2	0
	Area B Seine	Barkley Sockeye (23)	0	0
	Area B Seine	Fraser Sockeye (12,13)	0	0
	Area B Seine	Fraser Sockeye (16)	0	0
	Area B Seine	Fraser Sockeye (29)	0	0
	Area B Seine	Mainland Pink (12,16)	0	14
	Area B Seine	Howe Sound Pink (28)	0	0
	Area B Seine	Fraser Pink (29)	0	0
	Area B Seine	Nitinat Chum (21, 121)	58,580	1
	Area B Seine	JST Chum (12,13)	352,502	0
	Area B Seine	Fraser Chum (29)	4,513	0
	Area B Seine	MM Chum (14-19)	183,033	0
	Area D Gillnet	Barkley Sockeye (23)	10	2
	Area D Gillnet	Barkley Chum (23)	0	0
	Area D Gillnet	Somass Chinook (23)	0	3
	Area D Gillnet	Clayoquot Chum (24)	0	0
	Area D Gillnet	Tlupana Chinook (25)	18	0
	Area D Gillnet	Nootka Chum (25)	1,428	0
	Area D Gillnet	Fraser Sockeye (11,12,13,14)	0	0
	Area D Gillnet	JST Chum (12,13)	91,795	21
	Area D Gillnet	MM Chum (14)	12,812	9
	Area E Gillnet	Fraser Sockeye (29)	0	0
	Area E Gillnet	Fraser Chum (29)	125,463	67
	Area E Gillnet	Nitinat Chum (21, 121)	110,535	0
	Area E Gillnet	MM Chum (Area 17-19)	40,250	0
Commercial Harvest Total			**1,030,507**	**142**
First Nations Commercial	Taaq-wiihak	WCVI ISBM Chinook (25)	6	0
	Taaq-wiihak	WCVI AABM Chinook (24 - 26, 124 - 126)	0	1
	Maa-nulth HA	Henderson Sockeye (23)	0	0
	Harvest Agreement	Fraser River	7,792	0
	EO	Johnstone Strait	0	0
	EO	Strait of Georgia	0	0
	EO	WCVI	0	0
	EO	Fraser River	100,441	14
	Demo	Johnstone Strait	0	0
	Demo	Strait of Georgia	0	0
	Demo	WCVI	0	0
	Demo	Fraser River	14,076	586
Total First Nations EO Catch			**122,315**	**601**
Total Commercial Catch			**1,152,822**	**743**
Recreational	Sport	Juan de Fuca (19,20)	162	6
	Sport	Strait of Georgia (13-19,28,29)	1,721	50
	Sport	Johnstone Strait (11-12)	59	31
	Sport	WCVI - Inshore (20W-27)	30	0
	Sport	WCVI - Offshore (121-127)	49	7
	Sport	Fraser River	55	17
Total Recreational Catch			**2,076**	**111**
First Nations FSC and Treaty		Johnstone Strait	18,372	3
		Strait of Georgia	6,416	0
		WCVI	2,246	0
		Fraser River	36,273	59
Total First Nations FSC Catch			**63,307**	**62**
First Nations ESSR		Johnstone Strait	0	0
		Strait of Georgia	16,415	0
		WCVI	67,861	0
		Fraser River	15,666	0
Total First Nations ESSR Catch			**99,942**	**0**
TOTAL - ALL FISHERIES			**1,318,147**	**916**

Table 60. - Preliminary 2015 Southern B.C. Commercial Catch Totals by Gear and Area

Commercial total, all species

License Group	Fishing Area	Adult Sockeye Kept	Sockeye Released	Coho Kept	Coho Released	Pink Kept	Pink Released	Chum Kept	Chum Released	Chinook Kept	Chinook Released
Area G Troll*	WCVI AABM Chinook (23-27,123-127)	0	2	16,501	1,883	25	46	996	25	54,338	3,433
Area H Troll	Fraser Sockeye (12,13)	0	0	0	0	0	0	0	0	0	0
Area H Troll	Fraser Sockeye (29)	0	0	0	0	0	0	0	0	0	0
Area H Troll	Fraser Sockeye (12, 13, 29)	0	0	0	0	0	0	0	0	0	0
Area H Troll	JST Chum (12,13)	0	8	0	599	24	12	48,544	0	0	19
Area H Troll	Fraser Chum (29)	0	0	0	0	0	0	26	0	0	0
Area H Troll	MVI Chum (14)	0	0	0	0	0	0	2	0	0	0
Area B Seine	Barkley Sockeye (23)	536,003	4,744	0	36	1	9	0	0	0	148
Area B Seine	Fraser Sockeye (12,13)	0	0	0	0	0	0	0	0	0	0
Area B Seine	Fraser Sockeye (16)	0	0	0	0	0	0	0	0	0	0
Area B Seine	Fraser Sockeye (29)	0	0	0	0	0	0	0	0	0	0
Area B Seine	Mainland Pinks (12, 13, 16)	0	11	0	63	95,198	0	0	14	0	7
Area B Seine	Howe Sound Pink (28)	0	1	0	1	136,964	0	0	0	0	17
Area B Seine	Fraser Pink (29)	0	0	0	5	0	27	0	0	0	21
Area B Seine	Nitinat Chum (21, 121)	0	0	0	83	0	0	58,580	1	0	0
Area B Seine	JST Chum (12,13)	10	23	576	2,160	145	4	352,502	0	4	38
Area B Seine	Fraser Chum (29)	0	0	0	51	0	0	4,513	0	0	0
Area B Seine	MVI Chum (14-19)	0	0	0	43	0	0	183,033	0	0	2
Area D Gillnet	Barkley Sockeye (23)	329,381	42	266	49	174	41	10	2	0	0
Area D Gillnet	Barkley Chum (23)	0	0	0	0	0	0	0	0	0	0
Area D Gillnet	Somass Chinook (23)	124	2	57	0	0	0	0	3	438	9
Area D Gillnet	Clayoquot Chum (24)	0	0	0	0	0	0	0	0	0	0
Area D Gillnet	Tlupana Chinook (25)	0	0	0	0	0	0	18	0	9,615	1
Area D Gillnet	Nootka Chum (25)	0	0	12	0	0	0	1,428	0	0	0
Area D Gillnet	Fraser Sockeye (11,12,13,14)	0	0	0	0	0	0	0	0	0	0
Area D Gillnet	JST Chum (12,13)	1	2	7	1,469	114	4	91,795	21	0	22
Area D Gillnet	MVI Chum (14)	0	0	0	10	0	0	12,812	9	0	0
Area E Gillnet	Fraser Sockeye (29)	0	0	0	0	0	0	0	0	0	0
Area E Gillnet	Fraser Chum (29)	0	4	4	730	2	4	125,463	67	104	129
Area E Gillnet	Nitinat Chum (21, 121)	0	0	0	74	2	0	110,535	0	0	5
Area E Gillnet	MVI Chum (Area 14-19)	0	0	0	47	0	0	40,250	0	0	2
T'aaq-wiihak Demo	WCVI AABM Chinook (24-26,124-126)	0	3	574	1,728	0	877	0	1	6,234	996
T'aaq-wiihak Demo	WCVI ISBM Chinook (25)	0	0	7	0	0	0	6	0	1,032	0
Maa-nulth HA	Henderson Sockeye (23)	0	0	0	0	0	0	0	0	0	0
Harvest Agreement	Fraser	0	0	0	11	0	0	7,792	0	0	0
EO	Johnstone Strait	0	0	0	0	0	0	0	0	0	0
EO	Strait of Georgia	0	0	0	0	0	0	0	0	0	0
EO	WCVI	309,531	0	1,044	0	0	0	0	0	6,692	0
EO	Fraser River	6	299	440	2,291	452	31	100,441	14	22	606
Demo	Johnstone Strait	0	0	0	0	0	0	0	0	0	0
Demo	Strait of Georgia	0	0	0	0	0	0	0	0	0	0
Demo	WCVI	0	0	0	0	0	0	0	0	0	0
Demo	Fraser River	2	552	86	565	38,973	64	14,076	586	2,493	875
TOTALS		**1,175,058**	**5,693**	**19,574**	**11,898**	**272,074**	**1,119**	**1,152,822**	**743**	**80,972**	**6,330**

*Area G coho harvest estimate is based on the chinook year (Oct 1, 2014 to Sept 30, 2015). Total coho retained includes 10,422 from 2014 with the remainder in 2015 fisheries.

Table 61. - Preliminary 2015 Southern B.C. Recreational Catch Totals by Area

Fishing Area	Sockeye Kept	Sockeye Released	Coho Kept	Coho Released	Pink Kept	Pink Released	Chum Kept	Chum Released	Chinook ISBM Kept	Chinook ISBM Released	Chinook AABM Kept	Chinook AABM Released
Juan de Fuca (19,20)	212	1,323	11,083	25,811	58,104	63,845	162	6	30,558	20,913	-	-
Strait of Georgia (13-19,28,29)	84	2,991	7,216	27,562	28,155	17,832	1,721	50	51,483	36,655	-	-
Johnstone Strait (11-12)	14	100	8,600	4,833	6,606	7,185	59	31	12,127	9,138	-	-
WCVI - Inshore (20W-27)	88,232	646	18,091	11,932	3,551	8,998	30	-	31,753	14,877	7,215	4,051
WCVI - Offshore (121-127)	225	63	7,716	17,699	2,533	9,203	49	7	-	-	41,560	24,279
Fraser River	37	4,169	23	35	12,266	19,746	55	17	13,186	1,702	-	-
TOTAL	**88,804**	**9,292**	**52,729**	**87,872**	**111,215**	**126,809**	**2,076**	**111**	**139,107**	**83,285**	**48,775**	**28,330**

All totals are preliminary.
SOG includes a portion of Area 19 (19 GS).
JDF includes a portion of 19 and a portion of Area 20 (20 JDF).
WCVI Inshore contains a portion of 20W (West of Sherringham)
•estimates not yet available for some lower Fraser River recreational fisheries

Table 62. - Preliminary 2015 Southern B.C. First Nations (FSC and Treaty) and ESSR Catch Estimates by Area

Fishery type	Fishing Area	Sockeye Kept	Sockeye Released	Coho Kept	Coho Released	Pink Kept	Pink Released	Chum Kept	Chum Released	Chinook ISBM Kept	Chinook ISBM Released	Chinook AABM Kept	Chinook AABM Released
First Nations FSC and Treaty	Johnstone Strait	41,479	0	486	0	15,285	4,893	18,372	3	261	4	0	0
	Strait of Georgia	0	0	0	0	512	0	6,416	0	4	0	0	0
	WCVI	39,394	0	1,917	0	5	0	2,246	0	2,019	0	3,946	0
	Fraser River	143,248	5,494	447	118	25,585	7,461	36,273	59	23,712	163	0	0
TOTAL		**224,121**	**5,494**	**2,850**	**118**	**41,387**	**12,354**	**63,307**	**62**	**25,996**	**167**	**3,946**	**0**

Fishery type	Fishing Area	Sockeye Kept	Sockeye Released	Coho Kept	Coho Released	Pink Kept	Pink Released	Chum Kept	Chum Released	Chinook ISBM Kept	Chinook ISBM Released	Chinook AABM Kept	Chinook AABM Released
ESSR	Johnstone Strait	0	0	0	0	153,915	0	0	0	0	0	0	0
	Strait of Georgia	0	0	2,528	250	38,536	0	16,415	0	1,209	0	0	0
	WCVI	793	0	2,120	0	0	0	67,861	0	31,581	0	0	0
	Fraser River	0	0	11,284	0	0	0	15,666	0	8,752	0	0	0
TOTAL		**793**	**0**	**15,932**	**250**	**192,451**	**0**	**99,942**	**0**	**41,542**	**0**	**0**	**0**

Table 63. - Preliminary 2015 South Coast Test Fishery Catches

Test-Fisheries	Start Date	End Date	Boat Days	Sockeye kept	Sockeye released	Coho kept	Coho released	Pink kept	Pink released	Chum kept	Chum released	Chinook kept	Chinook released	GRAND TOTAL
Albion Chinook Gillnet				438	72	5	0	30	0	1,728	0	2,052	0	**4,325**
Albion Chum Gillnet				28	11	65	0	100	0	8,603	0	606	0	**9,413**
Area 12 Chum Seine	15-Sep-15	4-Nov-15	66	187	38	40	754	802	23	42,544	41,249	0	61	**85,698**
Naka Creek Sockeye Gillnet	19-Jul-15	31-Jul-15	11	1,243	0	59	38	1,609	0	39	13	4	0	**3,005**
Area 13 Sockeye Seine	20-Jul-15	13-Sep-15	39	8,945	14,815	0	138	13,081	48,030	200	972	1	232	**86,414**
Area 23 Sockeye Seine	8-Jun-15	11-Aug-15	23	11,146	95,767	0	5	1	8	0	1	0	108	**107,036**
Blinkhorn Sockeye Seine	20-Jul-15	13-Sep-15	50	10,616	20,840	0	750	25,591	138,936	595	2,219	0	807	**200,354**
Round Island Sockeye Gillnet *	13-Jul-15	16-Aug-15	32	998	0	108	57	1,677	1	47	0	47	4	**2,939**
San Juan Sockeye Seine				8,161	685	0	2,413	47,209	38,392	0	243	9	2,178	**99,290**
San Juan Sockeye Gillnet				2,087	1	0	146	491	1	2	1	0	56	**2,785**
Whonnock Gillnet				2,042	12	12	0	1,087	15	176	1	1,425	12	**4,782**
Cottonwood Gillnet				1,517	12	0	10	349	3	15	2	179	13	**2,100**
Qualark Gillnet				1,482	8	2	0	567	70	0	0	254	304	**2,687**
Grand Total				**48,890**	**132,261**	**291**	**4,311**	**92,594**	**225,479**	**53,949**	**44,701**	**4,577**	**3,775**	**610,828**

* coho given to local First Nations

Note: Jacks included in all test fishing catches if encountered

D. 2015 UPDATE REPORTS FOR SALMONID ENHANCEMENT PROGRAMS IN THE UNITED STATES AND CANADA

The Pacific Salmon Treaty between Canada and the United States requires that information be exchanged annually regarding operation of and plans for existing enhancement projects, plans for new projects, and views concerning the other country's enhancement projects. In 1988, a committee was formed to develop recommendations for the pre- and post-season and enhancement report formats. In summary, the committee proposed that:

- detailed reports on existing enhancement facilities of the type produced in 1987 be prepared every four years;
- the Parties will annually update information on eggs taken, fry or smolt released and adults back to the facility; significant changes in facility mission or production will be highlighted in narratives; and
- the Parties will provide periodic reports through the appropriate panels on new enhancement plans.

2004 ANNUAL REPORT ON THE SALMON ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2016.

2005 ANNUAL REPORT ON THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2016.

2006 ANNUAL REPORT ON THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2016.

2007 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2016.

2008 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2016.

2009 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2016.

2010 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2016.

2011 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2016.

2012 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2016.

2013 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2016.

2014 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2016.

2015 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2016.

2006 REPORT ON THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

This report had not been received by March 31, 2016.

2007 REPORT ON THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

This report had not been received by March 31, 2016.

2008 REPORT ON THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

This report had not been received by March 31, 2016.

2009 REPORT ON THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

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2010 REPORT ON THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

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2014 REPORT ON THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

This report had not been received by March 31, 2016.

2015 REPORT ON THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

This report had not been received by March 31, 2016.

Reports of the Joint Technical Committees

PART V
REPORTS OF THE JOINT TECHNICAL COMMITTEES

Executive summaries of reports submitted to the Commission by the joint technical committees during the period April 1, 2015 to March 31, 2016 are presented in this section. Copies of the complete reports are available from the library of the Pacific Salmon Commission.

A. JOINT CHINOOK TECHNICAL COMMITTEE

2014 EXPLOITATION RATE ANALYSIS AND MODEL CALIBRATION
TCCHINOOK (15)-1 – July 2015

The Pacific Salmon Treaty (PST) requires the Chinook Technical Committee (CTC) to report annual catches, harvest rate indices, estimates of incidental mortality (IM) and exploitation rates for all Chinook salmon fisheries and stocks harvested within the Treaty area. The CTC provides an annual report to the Pacific Salmon Commission (PSC) to fulfill this obligation as agreed by Canada and the US under Chapter 3 of the Treaty. This report contains four sections: description of procedures and a review of the results from the annual Exploitation Rate Analysis (ERA) based on coded wire tag (CWT) data, description of the calibration procedure and results from the calibration of the PSC Coastwide Chinook Model, an evaluation of mark-selective fisheries (MSFs), and a review of program improvements to the coastwide CWT program. Additionally, this report contains the results of the annual exploitation rate assessment of CWT data through 2012 (US stocks) and 2013 (Canadian stocks), the preseason PSC Chinook Model calibration results for 2014 (CLB 1402), postseason PSC Chinook Model calibration results through 2013 (CLB 1402), and the CWT Improvement program results from 2013 and planned projects for 2014. Results include the abundance indices (AIs) for the aggregate abundance-based management (AABM) fisheries and individual stock based management (ISBM) indices for each country.

AABM Abundance Indices and Associated Catches

The pre- and postseason AIs for the three AABM fisheries, Southeast Alaska (SEAK), Northern British Columbia (NBC), and West Coast Vancouver Island (WCVI) are presented in Table 1. The 2009 PST Agreement specifies that the AABM fisheries are to be managed through the use of the AIs. Each model calibration provides the postseason AIs for the previous year and the preseason AIs for the current year. Preseason AIs are used to estimate the total allowable catch limits in the upcoming fishing season. Catch overages and underages are tracked by the AIs, and associated allowable catches are calculated by the first CTC-accepted postseason model calibration for a fishing year, per PST subparagraph 11(a)(i).

The 2009 PST Agreement specifies an allowable catch associated with each AI for each AABM fishery. The maximum allowable treaty catch (total catch minus any hatchery add-on and exclusion catch) by fishery and year and the observed treaty catches are shown in Table 2.

Table 1.- Abundance Indices for 2009–2013 for the SEAK, NBC, and WCVI AABM fisheries. Postseason values for each year are from the first postseason calibration following the fishing year.

Year	SEAK Preseason	SEAK Postseason	NBC Preseason	NBC Postseason	WCVI Preseason	WCVI Postseason
2009	1.33	1.20	1.10	1.07	0.72	0.61
2010	1.35	1.31	1.17	1.23	0.96	0.95
2011	1.69	1.62	1.38	1.41	1.15	0.90
2012	1.52	1.24[1]	1.32	1.15[1]	0.89	0.76[1]
2013	1.20[1]	1.63	1.10[1]	1.51	0.77[1]	1.04
2014	2.57		1.99		1.20	

[1] Due to changes in calibration procedures (reviewed in section 3.1.4), 2012 postseason (CLB 1309) and 2013 preseason (CLB 1308) AIs are based on different calibrations; the procedures and assumptions CLB 1309 mirror those used during the 2012 preseason calibration.

Table 2.- Preseason allowable catches for 2009–2014, and postseason allowable catches and observed catches for 2009–2013 for AABM fisheries. Postseason values for each year are from the first postseason calibration following the fishing year.

PST Treaty Allowable and Observed Catches

Year	SEAK (T, N, S)[1] Preseason Allowable Catch	SEAK (T, N, S)[1] Postseason Allowable Catch	SEAK (T, N, S)[1] Observed Catch	NBC (T, S) Preseason Allowable Catch	NBC (T, S) Postseason Allowable Catch	NBC (T, S) Observed Catch	WCVI (T, S) Preseason Allowable Catch	WCVI (T, S) Postseason Allowable Catch	WCVI (T, S) Observed Catch
2009	218,800	176,000	227,533	143,000	139,100	109,470	107,800	91,300	124,617
2010	221,800	215,800	230,250	152,100	160,400	136,613	143,700	142,300	139,047
2011	294,800	283,300	290,297	182,400	186,800	122,660	196,800	134,800	204,232
2012	266,800	205,100	242,034	173,600	149,500	120,307	133,300	113,800	134,468
2013	176,000	284,900	183,891	143,000	220,300	115,914	115,300	178,000	113,598
2014	439,400			290,300			205,400		

[1] T = troll, N = net, and S = sport.

[2] Values changed because the method used to partition gillnet catch into large and nonlarge fish has changed. This change affects the computation of the terminal exclusion, add-on, and treaty catch.

Table 3 shows the differences between the postseason allowable catches and the observed treaty catches in AABM fisheries for 2009–2013, and the cumulative deviation for those years. In SEAK, the 2013 catch was 35.5% below the postseason allowable catch, and the cumulative cross-year difference is 0.8% above. In NBC, the 2013 catch was 19.5% below the postseason allowable catch and the cumulative difference is 29.3% below. In WCVI, the 2013 catch was 36.2% below the postseason allowable catch and the cumulative difference is 8.4% above the postseason allowable catch. The AABM fisheries have exceeded the preseason allowable catch 4 (SEAK), 0 (NBC), and 3 (WCVI) times in the 2009–2013 period.

Table 3.- Deviations in numbers of Chinook salmon caught and percentages from allowable catches derived from the postseason AI (Table 2) for PST AABM fisheries in 2009–2013. Postseason values for each year are from the first postseason calibration following the fishing year.

Year	SEAK Number of Fish	SEAK Percent Difference	NBC Number of Fish	NBC Percent Difference	WCVI Number of Fish	WCVI Percent Difference
2009	51,533	29.3%	−29,630	−21.3%	33,317	36.5%
2010	14,450	6.7%	−23,787	−14.8%	−3,253	−2.3%
2011	6,997	2.5%	−64,140	−34.3%	69,432	51.5%
2012	36,934	18.0%	−29,193	−19.5%	20,668	18.2%
2013	−101,009	−35.5%	−104,386	−47.4%	−64,402	−36.2%
Cum.	**8,905**	**0.8%**	**−251,136**	**−29.3%**	**55,762**	**8.4%**

Overages and underages in AABM catches, relative to the first postseason calibration for a fishing year (Table 3), can arise due to the inseason management system, errors in the preseason calibration process (e.g., forecast error), or a combination of the two. The relative influence of each was evaluated by inspecting differences in actual landed catch and allowable catches from both preseason and postseason calibrations (Table 4). Regarding the inseason management system in 2013, actual landed catch was greater than preseason allowable catch by 7,891 Chinook salmon in SEAK, fewer than preseason allowable catch by 27,086 in NBC, and fewer than preseason allowable catch by 1,702 in WCVI. In terms of the postseason allowable catches for evaluation of the provisions of the PST (subparagraph 11(a)(i)), actual catches were less than the postseason allowable catches by 101,009 Chinook salmon in SEAK, 104,386 in NBC, and by 64,402 in WCVI.

Table 4.- Deviations in actual landed catch (LC), allowable landed catch determined from preseason model calibration (PreALC), and allowable landed catch determined from postseason model calibration (PostALC) for AABM fisheries, 1999–2013.

Year	SEAK LC–PreALC	SEAK PreALC–PostALC	SEAK LC–PostALC	NBC LC–PreALC	NBC PreALC–PostALC	NBC LC–PostALC	WCVI LC–PreALC	WCVI PreALC–PostALC	WCVI LC–PostALC
2009	8,733	42,800	51,533	−33,530	3,900	−29,630	16,817	16,500	33,317
2010	8,450	6,000	14,450	−15,487	−8,300	−23,787	−4,653	1,400	−3,253
2011	−4,503	11,500	6,997	−59,740	−4,400	−64,140	7,432	62,000	69,432
2012	−24,766	61,700	36,934	−53,293	24,100	−29,193	1,168	19,500	20,668
2013	7,891	−108,900	−101,009	−27,086	−77,300	−104,386	−1,702	−62,700	−64,402

Note: Postseason values for each year are from the first postseason calibration following the fishing year. The difference between LC and PreALC represents the consequences of the management system employed in the year; the difference in PreALC and PostALC represents consequences of the forecast procedures and data used in forecasting the PreALC by the PSC Chinook Model. The difference in LC and PostALC captures the effects of both processes.

ISBM Indices

For ISBM fisheries, Paragraph 8 of the Chinook Chapter of the 2009 PST Agreement specifies that Canada and the US will reduce base period exploitation rates on specified stocks by 36.5% (Canada) and 40% (US), equivalent to ISBM indices of 63.5% (Canada) and 60% (US). This requirement is referred to as the general obligation and does not apply to stocks that achieve their CTC-agreed escapement goal. The 2009 PST Agreement also specifies that for those stocks in which the general obligation is insufficient to meet the escapement goal, the Party in whose waters the stock originates shall further constrain its fisheries to an extent that is not greater than the average ISBM exploitation rate which occurred in the years 1991 to 1996 (Paragraph 8 (c)). This requirement is referred to as the additional obligation.

Postseason ISBM Indices for 2012 and 2013

For 2012, six of the seven Canadian ISBM indices that could be calculated from CWT data were reduced more than required under the Agreement (Table 5). Only the ISBM index for the WCVI stock group exceeded the general obligation (0.635). Since there is no CTC-accepted escapement goal for this stock aggregate, the general obligation applies. For 2013, the four Canadian ISBM indices that could be calculated from CWT data were reduced more than required under the Agreement (Table 3.11).

Table 5.- ISBM indices based on 2012 and 2014 PSC Chinook Model, 2012 CWT analysis, and the 2014 indices predicted from the 2014 PSC Chinook Model, for the stock groups applicable to all BC ISBM fisheries as listed in Attachment IV of the Treaty.

Stock Group	Escapement Indicator Stock	2012 Model Indices for 2012	2014 Model Indices for 2012	CWT Indices for 2012	2014 Model Indices for 2014
Lower Strait of Georgia	Cowichan [1]	0.443 [2]	0.379 [2]	0.262 [3]	0.307 [2]
	Nanaimo [4]			NA [4,5]	
Fraser Late	Harrison River [1]	0.256	0.239	0.141 [6]	0.252
North Puget Sound Natural Springs	Nooksack	0.339	0.214	0.137	0.197
	Skagit	0.340	0.214	NA	0.197
Upper Strait of Georgia	Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish	0.596	0.126	0.175	0.598
Fraser Early (spring and summers)	Upper Fraser, Mid Fraser, Thompson	0.226	0.095	NA	0.213
West Coast Vancouver Island Falls	WCVI (Artlish, Burman, Kauok, Tahsis, Tashish, Marble)	0.636	0.706	1.017	0.639
Puget Sound Natural Summer/Falls	Skagit	1.421	0.172	NA	0.368
	Stillaguamish	1.329	0.293	0.158	0.462
	Snohomish	1.359	0.171	NA	0.367
	Lake Washington	0.991	0.246	NA	0.337
	Green River	1.000	0.246	0.346	0.337
North/Central BC	Yakoun, Nass, Skeena, Area 8	0.536	0.131	NA	0.502

[1] Stock or stock group with a CTC-agreed escapement goal.

[2] Although model-based indices were previously calculated separately for Cowichan and Nanaimo, these did not adequately represent impacts on either Lower Strait of Georgia stock because the model-based data represent an aggregate of the two stocks and methods do not currently exist to correctly disaggregate these data for calculation of the ISBM values. Until such methods are developed, a single index value only will be reported representing the aggregate.

[3] An inconsistency was discovered between the approaches used to calculate the model-based and CWT-based indices. The former included harvest rates for terminal sport while the latter did not. Terminal sport harvest rates are now included in the calculation of both indices. Further review is required to determine whether the base period terminal sport harvest rates obtained from analyses of Big Qualicum CWT recoveries adequately represent impacts that would have occurred on Cowichan Chinook.

[4] Several problems have been identified in the approach previously used to calculate the CWT-based indices for Nanaimo Chinook. Until these problems are resolved, indices for this stock will not be reported.

[5] Not available because of insufficient data (lack of stock-specific tag codes, base period CWT recoveries, etc.).

[6] The terminal sport harvest rates for Chilliwack Hatchery Chinook, the indicator stock, were removed from the calculation for the Harrison River naturals because sport harvest has been essentially zero on the natural population.

Four of the 15 US ISBM indices that could be calculated from CWT data for 2012 were reduced more than required under the 2009 Agreement. Ten US CWT-based ISBM indices exceeded either the general obligation or the additional obligation (Table 6). All of these 10 stocks have CTC-accepted escapement goals and all met or exceeded their respective escapement goals, and thus are in compliance under the Treaty. Only the Nooksack spring ISBM index exceeded the general obligation (0.600). Since there is no CTC-accepted escapement goal for this stock aggregate, the general obligation applies.

Preseason ISBM Indices for 2014

Of the 13 model-based ISBM indices for Canada, only the index for WCVI was predicted to marginally exceed the general obligation of 0.635 for Canadian ISBM fisheries in 2014 (Table 5). Since there is no CTC-accepted escapement goal for this stock aggregate, the general obligation would apply. The stocks with accepted escapement goals, Cowichan and Harrison, are expected to meet the obligations specified in Paragraph 8 of the Chinook Chapter.

Of the 20 model-based ISBM indices for US, 9 are predicted to be above the general obligation of 0.600 or the additional obligation (Table 6). All of the corresponding US stocks are expected to meet their CTC-agreed escapement goals.

Table 6.- ISBM indices based on 2012 and 2014 PSC Chinook Model, 2012 CWT analysis, and the 2014 indices predicted from the 2014 PSC Chinook Model, for the stock groups applicable to all Southern US fisheries as listed in Attachment V of the Treaty.

Stock Group	Escapement Indicator Stock	2012 Model Indices for 2012	2014 Model Indices for 2012	CWT Indices for 2012	2014 Model Indices for 2014
Washington Coastal Fall Naturals	Hoko	0.378	0.520	NA [1]	0.395
	Grays Harbor [2]	0.604	0.494	0.591	0.477
	Queets [2]	0.179	0.954	0.951	0.227
	Hoh [2]	0.443	1.230	1.593	1.251
	Quillayute [2]	1.151	1.700	2.140	1.149
Columbia River Falls	Upriver Brights [2]	0.894	1.022	3.133	0.914
	Deschutes [2]	0.684	0.680	1.045	0.696
	Lewis [2]	0.442	0.816	0.895	0.527
Puget Sound Natural Summer/Falls	Skagit	0.327	NC [3]	NA	0.718
	Stillaguamish	1.054	NC	0.213	0.131
	Snohomish	0.332	NC	NA	0.192
	Lake Washington	0.590	NC	NA	0.466
	Green R	0.631	NC	0.544	0.251
Fraser Late	Harrison River [2]	0.448	0.671	0.405	0.528
Columbia River Summers	Mid-Columbia Summers [2]	1.369	1.551	5.192	1.463
Far North Migrating OR Coastal Falls	Nehalem [2]	1.696	1.457	2.267	1.436
	Siletz [2]	0.814	0.669	0.997	0.717
	Siuslaw [2]	1.646	1.294	1.603	1.393
North Puget Sound Natural Springs	Nooksack	0.171	NC	2.758	0.274
	Skagit	0.147	NC	NA	0.357

[1] Not available because of insufficient data (lack of stock-specific tag codes, base period CWT recoveries, etc.).

[2] Stock with a CTC-agreed escapement goal.

[3] Not able to calculate (NC). Computation of ISBM Indices for Puget Sound stocks depends on output from the Fishery Regulation Assessment Model, which produces only one-year projections and does not run retrospectively.

Coded Wire Tag Program Improvement Activities

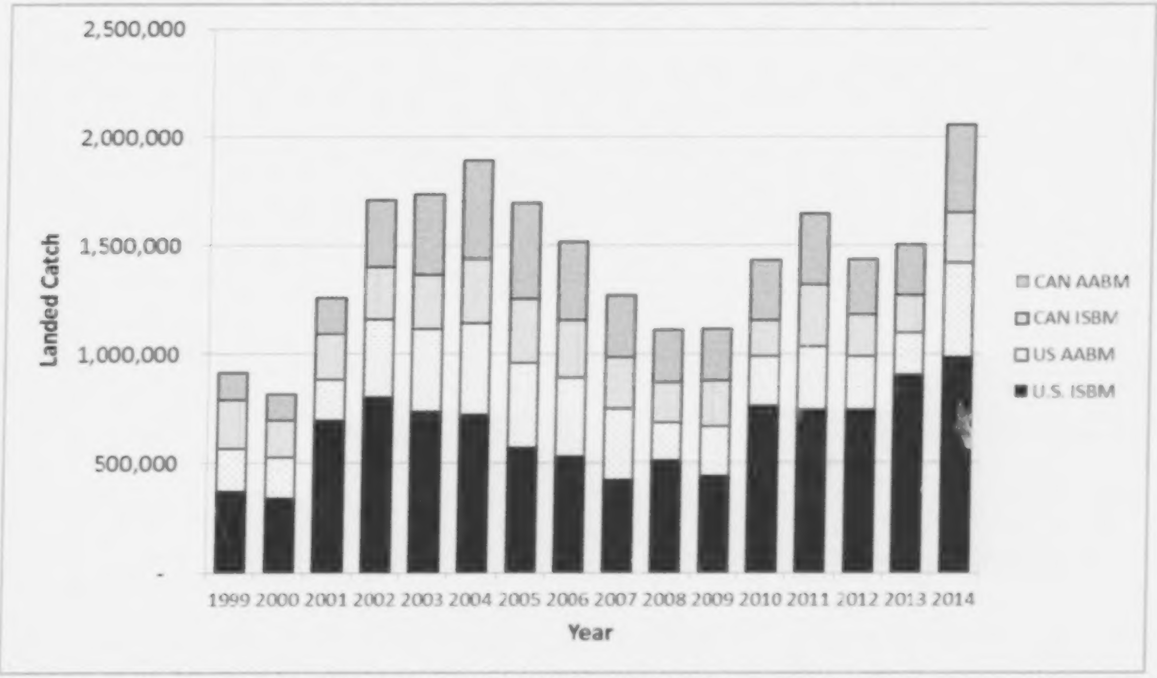
A summary of the Coded Wire Tag Improvement Program (CWTIP) for 2013 is presented in Chapter 5. The goal of the CWTIP is to improve CWT-based estimates used for management of Chinook salmon stocks in the geographic area covered by the PST. The 2013 season represents the fifth year of the program for Canada and the third year of the program for the US The Chapter 5 summary includes, over the years of the program to date, a summary of spending, performance and benefits of the CWTIP, as well as emerging and long-term issues facing the coastwide CWT program.

In 2013, the Commission approved $1.5 million in US funding and $1.5 million in Canadian funding for projects in each country. Summaries for individual projects are provided in Appendix L. Canadian projects included increased tagging for 12 CWT indicator stocks; increased escapement sampling for six stocks; program elements necessary for support of the Atnarko indicator stock in the Central BC fishing area; a substantial investment in upgrading the CWT reporting system; and improvements in sport and First Nations sampling and recovery rates, coordination and infrastructure (see Appendix Table L1). US-funded projects included tagging and sampling for three CWT indicator stocks (the Stikine, Chilkat, and Elk river stocks); CWT processing equipment for Alaska; CWT equipment (improved hand-held wands) for electronic sampling in Washington and Oregon; hand-held wands in SEAK to reduce costs of processing CWTs in commercial fisheries; estimation of CWTs in terminal sport fisheries in Puget Sound; and sampling of ocean troll and sport fisheries in Alaska, Washington, and Oregon (see Appendix Table L2).

ANNUAL REPORT OF CATCH AND ESCAPEMENT FOR 2014
TCCHINOOK (15)-2 - August 2015

The Pacific Salmon Treaty (PST; Public Law 99-5, 16 USC. 3631) requires the Chinook Technical Committee (CTC) to report annual catch and escapement data for Chinook salmon stocks that are managed under the Treaty. The CTC provides an annual report to the Pacific Salmon Commission (PSC) to fulfill this obligation. This report contains four sections: Chinook salmon catches, escapements, stock status providing an indication of stock performance in the context of management objectives, and a summary of the Sentinel Stocks Program (SSP) for 2014.

Section 1 summarizes fishery catches by region and available estimates of incidental mortality (IM) by fishery in 2014, with accompanying commentary on the fisheries, management, and derivation of IM. Annual catch data are compiled by Canada and the US for their respective jurisdictions within the PST area according to fishery regimes, regional locations, and gear type with estimates of IM. Landed catch (LC) is fully reported in the appendices for each geographic area covered under the PST; a summary for all PSC Aggregate Abundance Based Management (AABM) and Individual Stock Based Management (ISBM) fisheries, from 1999 to 2014, is provided in the figure below. Time series of available IM estimates are provided in Appendix A for individual fisheries. Appendix A also includes a coastwide summary of the historical time series of LC, IM, and their sum, total mortality (TM), across all AABM and ISBM fisheries.

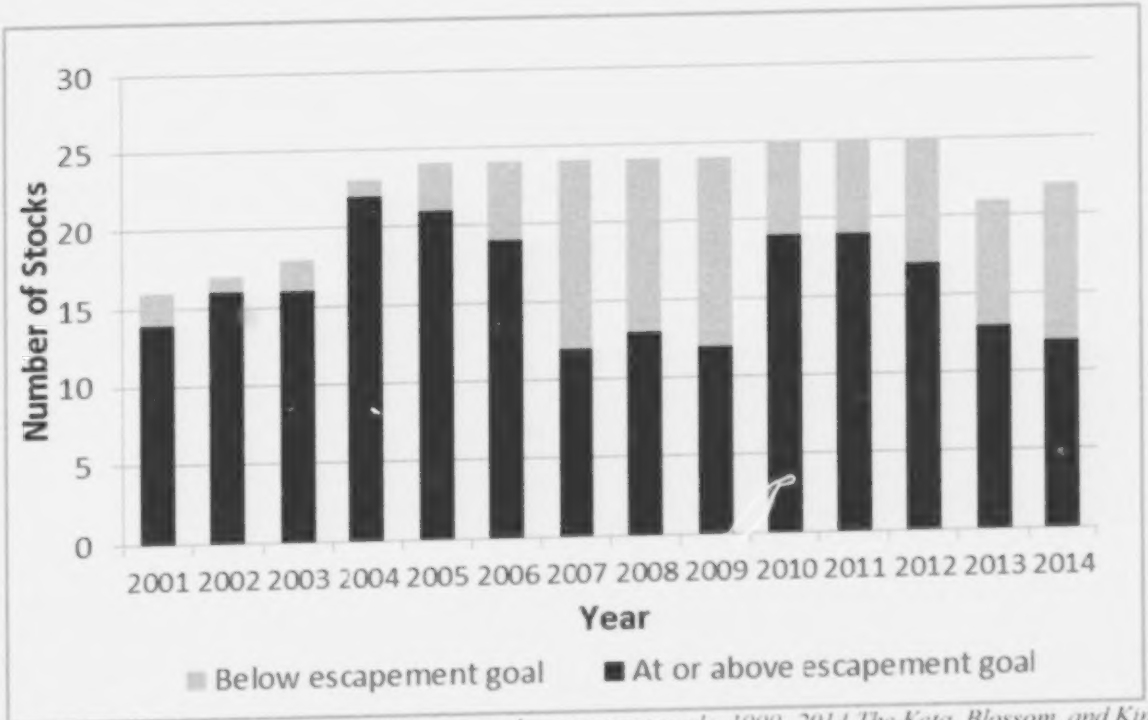


Estimates of landed catch for US and Canada AABM and ISBM fisheries, 1999–2014.

The preliminary estimate of Treaty LC of Chinook salmon for all PST fisheries in 2014 is 2,058,559, of which 1,418,770 were taken in US fisheries and 639,789 were taken in Canadian fisheries. The estimated total IM associated with this harvest is 249,703 nominal Chinook salmon. The TM for all PST fisheries in nominal fish was 2,308,262 Chinook salmon, of which 1,584,876 were taken in US fisheries and 723,386 were taken in Canadian fisheries. For US fisheries, 70% of the LC and 69% of TM occurred in ISBM fisheries; in Canada, 37% of the LC and 39% of TM occurred in ISBM fisheries. For some component sport fisheries, 2014 LC and IM estimates are not yet available.

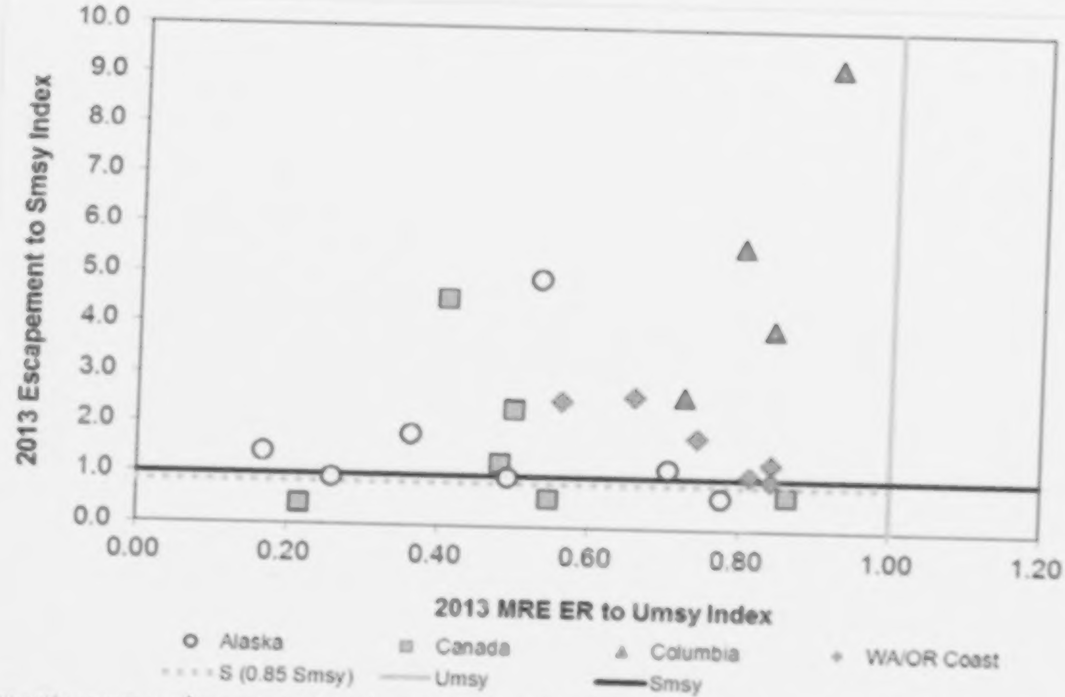
Section 2 includes an assessment of escapement for PST escapement indicator stocks/stock aggregates with CTC-accepted biologically based goals (22 stocks) as well as escapement data for the other indicator stocks/stock aggregates (24 stocks). For eight of these, the escapement goal is defined as a range; for the remaining 14, the escapement goal is the point estimate of SMSY (escapement producing maximum sustained yield). Annual escapements that are more than 15% below the lower end of the range or the SMSY point estimate are noted. The CTC will continue to review escapement goals for stocks as they are provided by respective agencies.

From 1999 to 2014, the percentage of stocks that met or exceeded escapement goals or goal ranges has varied from 50% to 96%. In 2014, 12 of 22 stocks (55%) met or exceeded escapement objectives. Of the 10 stocks below goal, six stocks (Situk, Alsek, Chilkat, Unuk, Quillayute fall, and Grays Harbor fall) were within 15% of the target goal. Four stocks were more than 15% below goal: Harrison, Cowichan, Queets spring/summer, and Hoh spring/summer).



Number and status of stocks with CTC-accepted escapement goals, 1999–2014.The Keta, Blossom, and King Salmon rivers and Andrews Creek stocks were dropped as escapement indicator stocks in 2013 and Grays Harbor fall was added in 2014, bringing the total number of stocks with CTC-accepted escapement goals to 22 in 2014.

Section 3 presents a synoptic evaluation of stock status that summarizes the performance of those stocks relative to established goals over time for many of the escapement indicator stocks. This evaluation draws upon the catch information (Section 1), escapement information (Section 2), and exploitation rates and other information to evaluate the status of stocks. Synoptic plots present both the current status of stocks and the history of the stocks relative to PST management objectives; this information clearly summarizes the performance of fisheries management relative to stocks achieving established or potential goals. A synoptic summary figure for 20 stocks with 2013 data shows that the majority of stocks were in the safe zone. No stocks were in the high risk zone and four stocks (Unuk, Cowichan, Harrison, and Nicola) were in the low escapement and low exploitation zone. One stock (Columbia Upriver Brights) experienced exploitation near UMSY and still the escapement exceeded SMSY by nearly 10-fold. The Washington and Oregon coastal stocks clustered closer to the 1.0 index lines than the other regional groups. In general, Columbia River stocks showed a higher escapement to SMSY index than the other regions where there was no pattern.



Synoptic summary by region of stock status for stocks with escapement and exploitation rate data in 2013 (escapement and exploitation rate data for each stock was standardized to the stock-specific escapement goal and UMSY reference points).

Section 4 consists of a summary of the 2014 SSP. The goal of the SSP is to improve estimates of escapement for Chinook salmon stocks in the following five coastal areas: Northern British Columbia (NBC), Fraser River, West Coast Vancouver Island (WCVI), Puget Sound, and North Oregon Coast (NOC) to a level that meets or exceeds bilateral assessment accuracy and precision standards. The 2014 season is the sixth year of the program. In 2014, the PSC approved $1,071,500 in funding for nine projects. Objectives of the funded projects were (1) to estimate escapements for stocks in the Nass and Skeena rivers (NBC), the Chilko and South Thompson rivers (Fraser), the Conuma River (WCVI), the Snohomish and Stillaguamish rivers (Puget Sound), and the Siuslaw river (NOC); and (2) to estimate the aggregate size of the terminal returns to the NOC and to WCVI. Escapement estimates and methods used to obtain those estimates are described in Section 4 and Appendix C for each of the funded programs.

SPECIAL REPORT – INVESTIGATION OF MATURATION RATE ESTIMATION MODELS AND THEIR INFLUENCE ON PSC CHINOOK MODEL ABUNDANCE INDICES

TCCHINOOK (16)-1 - February 2016

During the October 2015 Pacific Salmon Commission (PSC) Executive Session held in Suquamish, Washington the following assignment was given to the Chinook Technical Committee (CTC) by the PSC Commissioners:

The PSC Chinook Model performance over the last several years has been highly variable based on the wide swings in estimated abundance as expressed within the model calibration abundance indices. The amount of technical debate that has ensued over the last 8 months has been cause for the CTC and AWG to request of the Commission instruction on several aspects of technical work moving forward (Memo to Commissioners from CTC dated September 4, 2015). There were two elements that were transmitted relative to the US Section meeting on June 10, 2015: one was timeliness of release of the preseason abundance index and the other was stability of the model calibration results. There are also several work products that are of immediate and longer term value for the Commission that we request you complete as best possible within the prescribed timelines as depicted below. We have heard discussion and received reasonable correspondence specific to the timing element; however, the model stability element has not been adequately addressed.

The Commission is requesting that the AWG embark on investigating both the maturation rates and environmental variables to update and document the analyses performed in 2012 with the last two years of data. The objective is to provide for improved preseason and postseason abundance indices to be generated for the 2016 season and postseason AI's for both the 2014 and 2015 seasons. We understand it is important to start this work soon to inform the current year calibration, and suggest the work completed by December 15, 2015 and no later than January 1, 2016 so that we can be assured that a preseason AI can be generated, evaluated and released for fishery planning purposes.

The CTC-AWG updated the 2012 maturation rate (MR) and environmental variable (EV) analysis, which used results from the 2004 through 2012 calibrations of the PSC Coast Wide Chinook Model with results from the 2013 and 2014 calibrations (see TCCHINOOK (14)-01 V.1, section 3.1.4 for a description of the original work). The new analyses were based on pairings of MR estimates with the EV of the most recently completed brood. This decision was made because the 2012 analysis showed that the estimates of the age-specific MRs used to represent a stock's incomplete brood years had a much greater influence on AIs compared to the EV. In order to determine if the discrepancy between the preseason and post-season Chinook Model AIs could be reduced from the 5-year average (YA) model chosen in the 2012 analysis, the investigation was expanded to include more MR estimates. In addition to the long-term average (starting in 1979), stock- and age-specific MR averages ranging from 3 to 11 years from recent completed broods were evaluated. An approach to estimating the MRs for incomplete broods based on a time series exponential smoothing model (ETS) was also explored as a potential alternative to the method based on a simple average of a specified number of completed broods.

Model calibration results based on the above MR estimates were evaluated using four statistics (squared error, percent error, median error and absolute scaled error) which quantify the magnitude and direction of the discrepancy between two AIs. The statistics were calculated for the discrepancy observed between (1) the preseason AI for each AABM fishery and the first post-season AI, (2) the preseason AI and an average of the post-season AIs for that same year from calibrations completed three or more years after that preseason, and (3) the first post-season AI and the average AI from calibrations completed three or more years after that preseason calibration. Although the three types of discrepancies above were investigated, the one which carried the most weight in our findings was the discrepancy between the preseason AI and the first postseason AI due to the fact that the measures of compliance in the AABM fisheries are the allowable catches associated with the first postseason AIs.

Means (or median) of the error statistics were then computed to show which of the MR estimation models resulted in the greatest reduction in the discrepancy between AIs obtained from the Chinook Model calibrations. These results are documented in this report as well as other data and results considered relevant. The main findings of the MR-EV investigation are:

- Based on the composite mean squared error statistic (MSE), the 9-year average model (9YA) emerged as the estimation model that most reduced the discrepancy between the preseason and first post-season AI across Chinook Model calibrations and AABM fisheries (Table 1).
- The sensitivity of the above conclusion to the number of contributing calibrations was examined and the 9 YA again emerged as the best overall estimation model based on the composite MSE statistic (Table 2).
- The 9YA, 3-year average model (3YA), and time series model (ETS) most reduced the discrepancy between the preseason and first postseason AI across Chinook Model calibrations for the SEAK, NBC, and WCVI AABM fisheries respectively. However, further work is warranted since the difference in performance of a number of the models was small.
- The model used to estimate the MRs noticeably affected the time series of preseason and first post-season AIs for each AABM fishery, but the overall effect on the magnitude and direction of errors compared to the original calibration results was relatively small.
- An analysis using the North Oregon Coast stock aggregate demonstrated a method to estimate naturally-produced stock aggregate MRs by extrapolation from hatchery CWT indicator stock exploitation analysis, and the hatchery CWT indicator stock MRs differed quite substantially from the naturally-produced stock aggregate MRs.

The CTC recommends the utilization of the 9YA for the MRs and 1 year EV as the basis for estimating the stock- and age-specific MRs for the annual Chinook Model calibration (Table 1), and further recommends that the MR and EV analysis is repeated in subsequent years so that perceived potential improvements can be realized.

Table 1. Mean squared error between the preseason and first postseason AI assuming a 1 year EV. Each MR model depicts how the assumptions around incomplete brood years are modeled, including 3 to 11 year averages (e.g., 3YA), long-term averages (LTA) or via exponential smoothing (ETS). The composite MSE metric is the summation of the MSEs across the 3 fisheries. The scenario that minimized the MSE is highlighted in darker shading and the second best scenario is highlighted lighter shading.

Model	SEAK	NBC	WCVI	Composite
3YA	0.0289	**0.0233**	0.0161	0.0683
5YA	0.0309	0.0238	0.0157	0.0704
7YA	0.0300	0.0246	0.0132	0.0678
8YA	0.0299	0.0248	0.0134	0.0681
9YA	**0.0268**	0.0234	0.0125	**0.0627**
10YA	0.0320	0.0252	0.0125	0.0696
11YA	0.0357	0.0277	0.0131	0.0765
LTA	0.0374	0.0283	0.0180	0.0836
ETS	0.0333	0.0239	**0.0122**	0.0695

Table 2. The best MR estimation model in response to the number of calibrations included in MSE calculations. The earliest calibration year is 2004 in all cases. The composite is based on the sum of MSE values across fisheries. Abbreviations used in Table 1 are identical to those used in this table as well.

Last Year	# Calibrations	SEAK	NBC	WCVI	Composite
2013	10	9YA	3YA	ETS	9YA
2012	9	9YA	5YA	9YA	9YA
2011	8	9YA	5YA, 9YA	9YA	9YA
2010	7	9YA	9YA	9YA	9YA
2009	6	9YA	9YA	9YA, 10YA	9YA
2008	5	9YA	9YA	9YA	9YA

In summary, this investigation did show that improved performance of the Chinook Model, as measured by a reduction in the across-calibration discrepancy between the preseason and postseason AABM fishery AIs, could be achieved through use of MRs based on a 9YA from completed broods for each stock and age in the MATAEQ file. No analyses were undertaken to determine why any particular MR model performed better or worse than others.

B. JOINT CHUM TECHNICAL COMMITTEE

2012 POST SEASON SUMMARY REPORT
TCCHUM (15)-1 – August 2015

This Pacific Salmon Commission (PSC) Joint Chum Technical Committee report presents the information on Chum salmon stocks and fisheries in southern British Columbia (B.C.) and Washington (WA) for the year 2012 to address the specific provisions and requirements of Chapter 6, Annex IV (Chum Annex) of the Pacific Salmon Treaty (PST or Treaty) (Appendix A). The Treaty between the governments of Canada and the United States of America (U.S.) concerning Pacific salmon is designed to facilitate co-operation in the management, research and enhancement of Pacific salmon stocks. The Chum Annex requires that Canada and the U.S. maintain a Joint Chum Technical Committee reporting to the Southern Panel and the Commission and that certain fisheries for Chum salmon in southern B.C. and WA be managed in a specified manner (Appendix A). Certain fisheries of each country, while not specifically mentioned in the PST, are known to harvest Chum salmon originating in the other country.

This report presents various aspects of Chum salmon found in B.C. waters between Vancouver Island and the mainland, off the west coast of Vancouver Island, and in WA waters. This report also discusses the management actions of Canada and the U.S. in relation to the PST requirements for Chum salmon and provides a summary of the last 10 years of catch and escapement information for Chum salmon of concern to the Treaty. Returns in 2012 were average in B.C. to slightly below recent 9-yr average in WA.
The Chum Technical committee began developing proposals to address components of the strategic plan outlined in the 2010 report. The components included collecting and exchanging tissue samples from boundary area populations for the Chum salmon genetic baseline, organizing a series of meetings to present the Chum Technical committee vision to agencies, managers and samplers, as well as continuing mixed stock fishery sampling in key regions.

C. JOINT COHO TECHNICAL COMMITTEE

No reports were finalized for publication during this reporting period.

D. JOINT NORTHERN BOUNDARY TECHNICAL COMMITTEE

U.S./CANADA NORTHERN BOUNDARY AREA 2014 SALMON FISHERIES MANAGEMENT REPORT AND 2015 PRELIMINARY EXPECTATIONS
TCNB (15)-1 - April 2015

This report reviews:

1) catch, effort, and management actions in the 2014 Northern Boundary Area troll and net fisheries of southern Southeast Alaska Districts 101 to 108 and northern British Columbia Areas 1, 3, 4, and 5;

2) management performance relative to Pacific Salmon Treaty requirements for sockeye and pink salmon;

3) preliminary expectations and fishing plans for 2015.

2014 Fisheries

Pink salmon returns were generally very strong throughout southern Southeast Alaska and along the northern outer coast, but were very poor through much of the northern inside waters. The southern Southeast Alaska pink salmon harvest was 33.2 million (Districts 101-108, all harvest codes, all gear), which was 150% of the recent ten-year average and was the third highest even-year harvest since 1960. For all of Southeast Alaska, excluding the Yakutat area, the pink salmon harvest was 37.2 million fish, which was well above the preseason forecast point estimate of 22 million and above the 8-36 million 80% confidence interval range of the forecast.

The total 2014 Southeast Alaska pink salmon escapement index of 13.8 million index fish ranked 14th since 1960, and was the highest even-year index since 2004. Biological escapement goals are in place for three subregions in Southeast Alaska and escapement goals were exceeded for two of these subregions in 2014. On a finer scale, escapements met or exceeded management targets for 8 of 15 districts in the region and for 26 of the 46 pink salmon stock groups in Southeast Alaska. Nearly all of the districts and stock groups that were below management targets were in the Northern Southeast Inside Subregion. The Southern Southeast Subregion includes all of the area from Sumner Strait south to Dixon Entrance (Districts 101–108). The escapement index value of 9.65 million exceeded the escapement goal range of 3.0 to 8.0 million index fish and was the 9th largest index value since 1960.

Sockeye salmon catches in the Alaska boundary area were above the 1985–2013 average in the District 103 and 104 traditional purse seine fisheries and below average in the District 101 and 102 purse seine fisheries, and the District 101 drift gillnet fishery. The Hugh Smith Lake adult sockeye salmon escapement was 10,400, which was within the optimal escapement goal range of 8,000 to 18,000 adult sockeye salmon. The expanded peak survey estimate of 43,400 McDonald Lake sockeye salmon, however, was below the lower bound of the 55,000 to 120,000 sustainable escapement goal range.

Summer chum salmon catches in the Alaska boundary area drift gillnet and purse seine fisheries were generally below average. The Southern Southeast chum salmon stock group is composed of an aggregate of 13 summer-run chum salmon streams on the inner islands and mainland of southern Southeast Alaska, from Sumner Strait south to Dixon entrance, with a sustainable escapement goal of 54,000 index spawners (based on the aggregate peak survey to all 13 streams). The escapement index of 42,000 in 2014 was below goal.

Coho salmon catches in the Alaska boundary area were above average in gillnet and purse seine fisheries, and coho salmon escapement counts and estimates were above goal. The combined peak count of 16,675 coho salmon in the 14 surveyed streams in the Ketchikan survey index was well above the escapement goal of 4,250-8,500 fish and was the second highest index in the time series. The total escapement of 4,110 coho salmon to Hugh Smith Lake was well above the biological escapement goal range of 500-1,600 fish and was the highest escapement on record.

In Canadian Area 1 there are no longer commercial net interception fisheries on passing salmon stocks. A large pink surplus was identified in Masset Inlet, leading to a successful seine fishery that harvested 606,300 pink salmon. Gillnets were also open in Masset Inlet to target pink salmon, though no vessels participated in the fishery opening. No chum salmon surpluses were identified in-season. As such, no terminal chum-directed gillnet or seine fisheries occurred in 2014, and a chum non-retention regulation was in place during the Masset Inlet pink salmon directed seine fishery. Catches in the Area 1/101 troll fishery were below the previous decadal average for coho salmon (134,955 vs. 148,498 fish) and pink salmon (31,774 vs. 47,739 fish).

The Canadian Area 3 commercial net fishery anticipated a harvestable surplus of 240,000 Nass sockeye salmon, along with seine opportunities to harvest surpluses associated with an average pink salmon return. Coho salmon retention was also permitted throughout the fishing season while specific measures were in place to conserve local wild chum and Chinook salmon populations. Sockeye salmon catches were slightly below average in Area 3, with gillnets catching 111,426 compared to the previous decadal average of 122,351 and seines catching 33,071 compared to the previous decadal average of 46,759. Pink salmon catches were well below average in Area 3 for gillnets, catching 31,943 compared to the previous even-year decadal average of 342,185, and below average for seines, catching 861,855 fish compared to the previous even-year decadal average of 1,277,577 fish.

In late June, single 30-hour commercial gillnet opening targeting Skeena Chinook salmon caught 423 fish. The second anticipated opening directed at Skeena Chinook salmon did not occur due to poor gillnet CPUEs during the initial opening, and poor catches of Chinook salmon at the Tyee Test Fishery. The Area 4 net fishery was planned in anticipation of a commercial sockeye salmon surplus of 525,000 and a below average pink salmon return. The gillnet fishery was directed at Skeena sockeye salmon while also retaining coho and pink salmon. The total gillnet sockeye salmon harvest of 363,396 was well above the 2004–2014 average of 243,338 fish. The gillnet fleet also retained 7,293 coho and 310,394 pink salmon during the 2014 Area 4 fishery. The seine fleet targeted Skeena sockeye salmon in a quota controlled fishery, while also retaining pink and coho salmon. The final catches of 118,056 sockeye and 473,782 pink salmon compared to the 2004–2014 average of 70,829 sockeye and 151,983 pink salmon. The seine fleet also recorded a landed catch of 6,938 coho salmon.

As is the case in most years, Area 5 gillnet openings occur in concert with Area 4 openings directed at Skeena sockeye salmon. Limited effort resulted in the Area 5 gillnet fleet harvesting 848 sockeye and 3,066 pink salmon. Commercial seine opportunities in Area 5 were limited to a single pink-directed opening to target local Area 5 pink salmon stocks, with a harvest of 83,146 fish.

The preliminary sockeye salmon escapement estimate of 260,102 to the Nass was higher than the escapement target of 200,000 and the previous decade average of 158,557. The Skeena sockeye salmon net escapement estimate of 1.646 million was higher than the 2004 to 2014 average of 844,026, and almost double the target escapement of 900,000. Pink salmon returns throughout the North Coast were higher than expected and exceeded escapement goals in most cases. Chum salmon escapements continued to be poor and management measures to reduce impacts to wild chum salmon continued in 2014.

Management Performance

Pacific Salmon Treaty based harvest sharing agreements were renewed in 2009 for the Northern Boundary area fisheries—Alaska District 104 purse seine, Alaska District 101 drift gillnet, Canadian Area 3 net, and Canadian Area 1 troll. The agreements are "abundance based" where the allowable harvest is a percentage of the Annual Allowable Harvest (AAH). The AAH is the total return of applicable stocks minus the lesser of: 1) the actual escapement, or 2) the escapement goal. Catches over or under the AAH are summed over the period of the agreement to allow for annual variation.

In Alaska's District 104 purse seine fishery, the Nass and Skeena sockeye salmon run size determines the AAH of these stocks prior to Statistical Week 31. In Alaska's District 101 gillnet fishery, the AAH is based solely on the run size of Nass River sockeye salmon. The run size of Alaskan pink salmon returning to Districts 101-103 determines the allowable harvests of these stocks in Canada's Area 3 (1-4) net and Area 1 troll fisheries.

The agreement specifies a harvest in the District 104 purse seine fishery, from the beginning of the season through Statistical Week 30, of 2.45% of the combined AAH of both the Nass and Skeena River sockeye salmon runs. The fishery opens the first Sunday in July and in 2014 the initial opening was July 6 (Week 28). The 2014 pre-Week 31 fishing plan for District 104 was based on returns of local Alaskan stocks as well as the Canadian Department of Fisheries and Oceans (DFO) preseason forecast returns of approximately 642 thousand Nass River sockeye salmon and 2.3 million Skeena River sockeye salmon. The preseason forecasts resulted in a total projected return of 2.942 million Nass and Skeena sockeye salmon which, minus an escapement goal of 1.10 million, produced an AAH of approximately 1.842 million fish. Using this forecast, the 2014 pre-week 31 AAH was approximately 45,129 Nass and Skeena sockeye salmon in the District 104 purse seine fishery.

In the District 101 (Tree Point) drift gillnet fishery, the AAH is calculated as the total run of Nass sockeye salmon minus either the escapement requirement of 200,000 or the actual in-river escapement, whichever is less. The agreement specifies a harvest of 13.8 percent of the AAH of the Nass River sockeye salmon run.

The return of Nass sockeye salmon was forecast at 642,000 in 2014 which, minus an escapement goal of 200,000, would result in an AAH of about 442,000.

Using this forecast, the 2014 allowable harvest in the District 101 drift gillnet fishery was approximately 60,996 Nass River sockeye salmon.

The District 101 drift gillnet fishery opens by regulation on the third Sunday in June, which was June 15 (week 25) in 2014. During the early weeks of the fishery, management is based on the run strength of Alaska wild stock chum and sockeye salmon and on the strength of the Nass River sockeye salmon. Beginning in the third week of July, when pink salmon stocks begin to enter the fishery in large numbers, management emphasis shifts by regulation to that species. By regulation, the District 101 Pink Salmon Management Plan (PSMP) sets gillnet fishing time in this district in relation to the District 101 purse seine fishing time when both fleets are concurrently harvesting the same pink salmon stocks.

For the year 2014, Canada was to manage the Area 3-1 to 3-4 net fisheries to achieve an annual catch share of 2.49 % of the annual allowable harvest (AAH) of Alaskan Districts 101, 102 and 103 pink salmon. With a total return of approximately 50.79 million pink salmon, the Alaskan Districts 101, 102 and 103 AAH was 40.04 million pink salmon. The resulting Area 3-1 to 3-4 Canadian commercial net total allowable catch of this AAH was approximately 997,031 pink salmon of Alaskan Districts 101, 102 and 103 origin.

In the Canadian northern boundary area, pink salmon returns were anticipated to be below average for both Area 3 and Area 4, based on brood year return strength. Actual returns to Area 3 and 4 streams were above average. The 2014 preliminary Canadian pink salmon catch in Sub-areas 3-1 to 3-4 was 450,671 and the Alaska stock component of this catch is estimated to be 347,109, or 0.87 % of the AAH, well below the annex agreement of 2.49 %.

Also in 2014, Canada was to manage the Area 1 troll fishery to achieve an annual catch share of 2.57% of the annual allowable harvest (AAH) of Alaskan Districts 101, 102 and 103 pink salmon. With a total run of 50.79 million pinks, the resulting Area 1 Canadian commercial troll total allowable catch of this AAH was approximately 1.03 million pinks of Alaskan Districts 101, 102 and 103 origin.

The Canadian commercial troll fishery targeting pink salmon was open in the northern portion of Area 101 (Dixon Entrance AB Line) from July 1st to September 30th. Pink salmon retention was also permitted during the Chinook salmon directed fishery in parts of Area 1 which opened from June 21st to August 4th and again from September 1st to 30th. Area 1 pink salmon directed effort was very minimal and the fishery harvested a total of 31,775 pink salmon, with an estimated 26,798 being of Alaskan origin. This equates to 0.07 % of the Alaskan District 101, 102 and 103 pink AAH, well below the annex agreement of 2.57%.

2015 Forecasts

The Southeast Alaska pink salmon harvest in 2015 is predicted to be in the excellent range, with a point estimate of 58 million fish (80% confidence interval: 37–79 million fish). An actual harvest of 58 million pink salmon would be well above the recent 10-year average of 41 million pink salmon, and would be in the top ten harvests since 1960. The 2015 forecast was produced in two steps: 1) a forecast of the trend in the harvest, and 2) the forecast trend adjusted using 2014 juvenile pink salmon abundance data provided by the NOAA Fisheries, Alaska Fisheries Science Center, Auke Bay Laboratories. Formal forecasts are not made for species other than pink salmon in Southeast Alaska.

For northern British Columbia in 2015, an average Nass River sockeye salmon total return of 727,000 (with a 10% probability of the return exceeding 900,000 and a 90% probability the return will exceed 588,000) is expected. For the Skeena River in 2015, the sibling model forecast predicts a 50% probability of approximately 3.5 million sockeye salmon returning, with a 10% probability of a return exceeding 7.3 million and a 90% probability the return would exceed 1.7 million. Average pink salmon returns are anticipated to Area 3, while Areas 4 and 5 are expected to have below average returns, based on brood year escapements.

U.S./CANADA NORTHERN BOUNDARY AREA 2015 SALMON FISHERIES MANAGEMENT REPORT AND 2016 PRELIMINARY EXPECTATIONS

TCNB (16)-1 - March 2016

This report reviews:

1) catch, effort, and management actions in the 2015 Northern Boundary Area troll and net fisheries of southern Southeast Alaska Districts 101 to 108 and northern British Columbia Areas 1, 3, 4, and 5;

2) management performance relative to Pacific Salmon Treaty requirements for sockeye and pink salmon;

3) preliminary expectations and fishing plans for 2016.

2015 Fisheries

Pink salmon returns were generally very strong throughout northern Southeast Alaska, but were below average through much of the southern Southeast Alaska. The southern Southeast Alaska pink salmon harvest was 12.5 million (Districts 101-108, all harvest codes, all gear), which was only 53% of the recent ten-year average. For all of Southeast Alaska, excluding the Yakutat area, the pink salmon harvest was 35.0 million fish, which was well below the preseason forecast point estimate of 58 million and below the 37-79 million 80% confidence interval range of the forecast.

The total 2015 Southeast Alaska pink salmon escapement index of 12.4 million index fish ranked 18th since 1960. Biological escapement goals are in place for three subregions in Southeast Alaska and escapement goals were met or exceeded for all three in 2015. On a finer scale, escapements met or exceeded management targets for all 15 districts in the region and for 42 of the 46 pink salmon stock groups in Southeast Alaska. The Southern Southeast Subregion includes all of the area from Sumner Strait south to Dixon Entrance (Districts 101–108). The escapement index value of 4.3 million was within the escapement goal range of 3.0 to 8.0 million index fish, but was the lowest index since 1988 and the lowest odd-year escapement index since 1979. The pink salmon harvest of 12.5 million in the Southern Southeast Subregion was only 53% of the recent 10-year average. The overall Southeast Alaska pink salmon harvest of 35.0 million fish was below the 2005–2014 average of 40.6 million, and was the lowest odd-year harvest since 1997.

Sockeye salmon catches in the Alaska boundary area were above the 1985–2014 average in the District 102, 103 and 104 traditional purse seine fisheries and below average in the District 101 purse seine and District 101 drift gillnet fisheries. The Hugh Smith Lake adult sockeye salmon escapement was 21,300, which was above the optimal escapement goal range of 8,000 to 18,000 adult sockeye salmon. Based on the expanded peak foot survey count, the escapement of sockeye salmon into McDonald Lake was estimated to be 70,200 fish, which was within the sustainable escapement goal range of 55,000 to 120,000.

Summer chum salmon catches in the Alaska boundary area drift gillnet and purse seine fisheries were well above average. The Southern Southeast chum salmon stock group is composed of an aggregate of 15 summer-run chum salmon streams on the inner islands and mainland of southern Southeast Alaska, from Sumner Strait south to Dixon entrance, with a sustainable escapement goal of 62,000 index spawners (based on the aggregate peak survey to all 15 streams). Summer chum salmon escapements were excellent at most index streams in southern Southeast Alaska, and the index of 115,000 in 2015 was well above goal.

Coho salmon catches in the Alaska boundary area were below average in gillnet and purse seine fisheries, but coho salmon escapement counts and estimates were within or above goal ranges. The combined peak count of 10,032 coho salmon in the 14 surveyed streams in the Ketchikan survey index was above the escapement goal of 4,250–8,500 fish. The total escapement of 956 coho salmon to Hugh Smith Lake was within the biological escapement goal range of 500–1,600 fish.

In Canadian Area 1, there are no longer commercial net interception fisheries on passing salmon stocks. Being an off-year for Area 1 pinks, there were no commercial opportunities for pink salmon in 2015. In addition, there were no chum salmon surpluses identified in-season. As such, no terminal chum-directed gillnet or seine fisheries occurred in 2015. Catches in the Area 1/101 troll fishery were above the previous decadal average for coho salmon and below the decadal average for pink salmon.

The Area 3 commercial net fishery anticipated a harvestable surplus of 240,000 Nass sockeye salmon, along with seine opportunities to harvest surpluses associated with an average pink salmon return. Due to the recent increasing trend in Area 3/Nass coho salmon abundance, coho retention was permitted throughout the fishing season. Specific measures were in place to conserve local wild chum and Chinook salmon populations, including time and area closures. Sockeye salmon catches were above average in Area 3, though CPUEs were below normal due to poor fishing conditions. The gillnet fleet harvested 183,410 sockeye in 2015, while seines landed 22,049 sockeye. Pink salmon catches were also well below average in Area 3 for seines, with a total harvest of 181,218 pinks, compared to the previous even-year decadal average of 1.2 million. The harvest of 159,088 pinks by gillnets was above average and due to the increased effort allocated to harvest abundant, late migrating Nass sockeye.

There were two commercial gillnet openings targeting Skeena Chinook salmon in 2015, with total fishing time of 48 hours and total catch of 613 pieces. The Area 4 net fishery was planned in anticipation of a commercial sockeye salmon surplus of 900,000 and a below average pink salmon return. Due to poor returns of sockeye, only two openings directed at Skeena sockeye were permitted for both the gillnet and seine fleets, on August 23 and 24. Retention of pinks and coho was permitted for both fleets, while gillnets were also permitted to retain Chinook salmon. The total gillnet sockeye salmon harvest of 10,698 was well below the 2004–2014 average of 243,338 pieces. The gillnet fleet also retained 1,065 coho and 949 pink salmon during the 2015 Area 4 fishery. The seine fleet targeted Skeena sockeye salmon in a quota controlled fishery, while also retaining pink and coho salmon. The final catch for the seines was 2,539 sockeye, 663 coho and 816 pink salmon. All catches are well below the 2005–2014 average.

Area 5 did not open to commercial salmon fishing in 2015 due to lack of identified harvestable surpluses.

The preliminary sockeye salmon escapement estimate of 389,503 to the Nass was almost double the escapement target of 200,000 and well above the 2005–2014 average of 158,557. The Skeena sockeye salmon net escapement estimate of 1.26 million was much higher than the 2005 to 2014 average of 844,026, and well above the target escapement of 900,000. Pink salmon returns throughout the North Coast were much lower than expected and it is likely that escapement goals were not met in most cases. In general, early-returning stocks returning to the Nass and Skeena fared better than later-timed and coastal populations. Chum salmon escapements continued to be poor in Area 4, though escapements to Area 3 were much better than anticipated. Nonetheless, management measures to reduce impacts to wild chum continued in 2015 as part of the north coast chum rebuilding program.

Management Performance

Pacific Salmon Treaty based harvest sharing agreements were renewed in 2009 for the Northern Boundary area fisheries—Alaska District 104 purse seine, Alaska District 101 drift gillnet, Canadian Area 3 net, and Canadian Area 1 troll. The agreements are "abundance based" where the allowable harvest is a percentage of the Annual Allowable Harvest (AAH). The AAH is the total return of applicable stocks minus the lesser of: 1) the actual escapement, or 2) the escapement goal. Catches over or under the AAH are summed over the period of the agreement to allow for annual variation.

In Alaska's District 104 purse seine fishery, the Nass and Skeena sockeye salmon run size determines the AAH of these stocks prior to Statistical Week 31. In Alaska's District 101 gillnet fishery, the AAH is based solely on the run size of Nass River sockeye salmon. The run size of Alaskan pink salmon returning to Districts 101-103 determines the allowable harvests of these stocks in Canada's Area 3 (1-4) net and Area 1 troll fisheries.

The agreement specifies a harvest in the District 104 purse seine fishery, from the beginning of the season through Statistical Week 30, of 2.45% of the combined AAH of both the Nass and Skeena River sockeye salmon runs. The fishery opens the first Sunday in July and in 2015 the initial opening was July 5 (Week 28). The 2015 pre-Week 31 fishing plan for District 104 was based on returns of local Alaskan stocks as well as the Canadian Department of Fisheries and Oceans (DFO) preseason forecast returns of approximately 727,000 Nass River sockeye salmon and 3.5 million Skeena River sockeye salmon. The preseason forecasts resulted in a total projected return of 4.227 million Nass and Skeena sockeye salmon which, minus an escapement goal of 1.10 million, produced an AAH of approximately 3.127 million fish. Using this forecast, the 2015 pre-week 31 AAH was approximately 76,612 Nass and Skeena sockeye salmon in the District 104 purse seine fishery.

In the 2015 Treaty period (Alaska statistical weeks 28-30), 43,873 sockeye were harvested during two 15-hour openings in Week 28; one 15-hour opening in Week 29, and 15 and 10-hour openings in week 30 (Table 1). The preliminary estimates of Nass and Skeena sockeye salmon harvested prior to week 31 in the District 104 purse seine fishery was 21,433 fish in 2015. The final number of Nass and Skeena sockeye salmon harvested, and the actual harvest by stock, will not be available until harvest, escapement, and stock composition estimates are finalized for the year.

In the District 101 (Tree Point) drift gillnet fishery, the AAH is calculated as the total run of Nass sockeye salmon minus either the escapement requirement of 200,000 or the actual in-river escapement, whichever is less. The agreement specifies a harvest of 13.8 percent of the AAH of the Nass River sockeye salmon run. The return of Nass sockeye salmon was forecast at 727,000 in 2015 which, minus an escapement goal of 200,000, would result in an AAH of about 527,000. Using this forecast, the 2015 allowable harvest in the District 101 drift gillnet fishery was approximately 72,700 Nass River sockeye salmon. A total of 28,155 sockeye salmon were harvested, which was only 23% of the 1985-2014 average of 123,017 fish and was the lowest harvest since the inception of the Pacific Salmon Treaty. The preliminary estimate of Nass River sockeye salmon harvested in the District 101 drift gillnet fishery in 2015 was 14,867 fish.

The District 101 drift gillnet fishery opens by regulation on the third Sunday in June, which was June 21 (week 26) in 2015. During the early weeks of the fishery, management is based on the run strength of Alaska wild stock chum and sockeye salmon and on the strength of the Nass River sockeye salmon. Beginning in the third week of July, when pink salmon stocks begin to enter the fishery in large numbers, management emphasis shifts by regulation to that species. By regulation, the District 101 Pink Salmon Management Plan (PSMP) sets gillnet fishing time in this district in relation to the District 101 purse seine fishing time when both fleets are concurrently harvesting the same pink salmon stocks.

For 2015, Canada was to manage the Area 3-1 to 3-4 net fisheries to achieve an annual catch share of 2.49% of the annual allowable harvest (AAH) of Alaskan Districts 101, 102 and 103 pink salmon. With a total return of approximately 20.59 million pinks, the Alaskan Districts 101, 102 and 103 AAH was approximately 12.08 million pinks. The resulting Area 3-1 to 3-4 Canadian commercial net total allowable catch of this AAH was approximately 300,869 pinks of Alaskan Districts 101, 102 and 103 origin.

In the Canadian northern boundary area, pink salmon returns were anticipated to be average to below average for Area 3 and Area 4, based on brood year return strength. Actual returns to both Area 3 and Area 4 were below average. The 2015 preliminary Canadian pink salmon catch in Sub-areas 3-1 to 3-4 was 80,266, and the Alaska stock component of this catch is estimated to be 77,331, or 0.64 % of the AAH. This result is well below the annex agreement of 2.49%.

Also in 2015, Canada was to manage the Area 1 troll fishery to achieve an annual catch share of 2.57% of the annual allowable harvest (AAH) of Alaskan Districts 101, 102 and 103 pink salmon. With a Total Return of 20.59 million pinks, the resulting Area 1 Canadian commercial troll total allowable catch of this AAH was approximately 310,536 pinks of Alaskan Districts 101, 102 and 103 origin.

The Canadian commercial troll fishery targeting pink salmon was open in the northern portion of Area 1 (Dixon Entrance AB Line) from July 1 to September 30. Pink retention was also permitted during the Chinook-directed fishery in parts of Area 1, which was open from June 18 to July 31 and from August 25 to September 30. Effort directed at pink salmon in Area 1 was minimal in 2015. The fishery harvested a total of 41,551 pink salmon, with an estimated 39,462 being of Alaskan origin. This equates to 0.33% of the Alaskan District 101, 102 and 103 pink AAH, well below the annex agreement of 2.57%.

2016 Forecasts

The Southeast Alaska pink salmon harvest in 2016 is predicted to be in the strong range, with a point estimate of 34 million fish (80% confidence interval: 13–55 million fish). An actual harvest of 34 million pink salmon would be below the recent 10-year average harvest of 38 million pink salmon. The 2016 forecast was produced in two steps: 1) a forecast of the trend in the harvest, and 2) the forecast trend adjusted using 2015 juvenile pink salmon abundance data provided by the NOAA Fisheries, Alaska Fisheries Science Center, Auke Bay Laboratories. Formal forecasts are not made for species other than pink salmon in Southeast Alaska.

An average Nass River sockeye salmon total return of 567,000 (with a 10% probability of the return exceeding 883,000 and a 90% probability the return will exceed 399,000) is expected. The sibling model forecast predicts a 50% probability of approximately 1.28 million sockeye salmon returning to the Skeena River in 2015 with a 10% probability of a return exceeding 2.68 million and a 90% probability the return would exceed 614,000. Below average pink salmon returns are anticipated to Areas 3, 4 and 5, based on brood year escapements, while Area 1 pinks are returning from a strong brood in 2014.

E. JOINT TRANSBOUNDARY TECHNICAL COMMITTEE

SALMON MANAGEMENT AND ENHANCEMENT PLANS FOR THE STIKINE, TAKU AND ALSEK RIVERS, 2015

TCTR (15-1) – April 2015

Management of transboundary river salmon to achieve conservation, allocation and enhancement objectives, as stipulated by the Pacific Salmon Treaty (PST), requires a cooperative approach by Canada and the United States. It is important that both Parties have a clear understanding of the objectives and agree upon procedures to be used in managing the fisheries, including the criteria upon which modifications of fishing patterns will be based. This document is intended to facilitate cooperative salmon management, stock assessment, research and enhancement on transboundary stocks of the Stikine, Taku, and Alsek rivers conducted by the Canadian Department of Fisheries and Oceans (DFO), the Tahltan and Iskut First Nations (TIFN), the Taku River Tlingit First Nation (TRTFN), the Champagne & Aishihik First Nation (CAFN), and the Alaska Department of Fish and Game (ADF&G).

This report contains, by river system and species, the 2015 salmon run outlooks, spawning escapement goals, a summary of harvest sharing objectives, and an outline of management procedures to be used during the 2015 fisheries. Numerical forecasts are presented for: Stikine River sockeye and large Chinook salmon and Taku River large Chinook salmon as required by the PST; Taku sockeye and coho salmon; and Alsek sockeye and Chinook salmon. Outlooks for other stocks are given qualitatively with reference to brood year escapement data where available. This report also contains joint plans for fry stocks and egg collections and a detailed list of proposed field projects for 2015, identifying agency responsibility and contacts for the various functions within the projects.

ESTIMATES OF TRANSBOUNDARY RIVER SALMON PRODUCTION, HARVEST AND ESCAPEMENT AND A REVIEW OF JOINT ENHANCEMENT ACTIVITIES IN 2011

TCTR (15-3) – April 2015

Final estimates of harvests and escapements of Pacific salmon returning to the transboundary Stikine, Taku, and Alsek rivers for 2011 are presented and compared with historical patterns. Average, unless defined otherwise, refers to the most recent 10-year average (2001–2010). Relevant information pertaining to the management of appropriate U.S. and Canadian fisheries is presented and the use of inseason management models is discussed. Preliminary results from TBR sockeye salmon, Oncorhynchus nerka, enhancement projects are also reviewed.

Stikine River

The 2011 Stikine River sockeye salmon terminal run estimate was 213,400 fish, of which approximately 135,800 fish were harvested in various fisheries including test fisheries. An estimated 77,600 Stikine River fish escaped to spawn, including 14,000 fish that migrated to the Tuya River block that were not harvested. The Tahltan Lake sockeye salmon escapement of 35,000 was above the escapement goal range (18,000 to 30,000 fish). The estimated U.S. commercial harvest of Stikine River sockeye salmon in Districts 106 and 108, including the Stikine River subsistence fishery, was 74,000 fish. The Canadian inriver commercial fishery harvest was 48,600 and Aboriginal fishery harvest was 6,900 fish. The inriver test fishery harvested 3,100 sockeye salmon and there was no marine test fishery for sockeye salmon in 2011. Weekly inseason run projections from the SMM ranged from 160,000 to 183,000 sockeye salmon; the final inseason model prediction was 162,000 fish, with a TAC of 98,000 fish. Weekly inseason run projections using other methods ranged from 158,000 to 200,000 sockeye salmon; the final inseason predictions from other methods was 200,000 with a TAC of 136,000 fish. Based on final postseason run size estimate 213,400 and TAC calculations of 72,800 Stikine River fish for each country, Canada harvested 76% and the U.S. harvested 101% of their respective TACs. Broodstock collection removed 4,600 fish and otolith sampling removed 340 fish from the escapement to Tahltan Lake leaving a spawning escapement of 29,700 fish. The estimated spawning escapement of 29,400 mainstem Stikine River sockeye salmon was within the escapement goal range of 20,000 to 40,000 fish for this stock group.

The 2011 Stikine River large Chinook salmon final terminal run estimate was at 19,800 fish, of which approximately 5,300 fish were harvested in various fisheries. An estimated 14,500 Stikine River fish escaped to spawn; below the escapement point goal of 17,400 Chinook salmon, but within the escapement goal range of 14,000 to 28,000 fish. The terminal run and harvest were both below average. The Little Tahltan River large Chinook salmon escapement of 1,750 fish was below the Canadian escapement target of 3,300 fish and below the lower bound of the Canadian target range of 2,700 to 5,300 fish. The estimated U.S. commercial harvest of Stikine River large Chinook salmon in Districts 108 gillnet, test, troll, subsistence, and sport fisheries was 2,200 fish; based on postseason GSI. The estimated Canadian commercial, aboriginal, assessment/test, and sport fisheries harvest was 3,200 fish. Managers used the MR, model, and other assessment estimates to generate inseason run sizes after SW 32. The inseason run projections were persistent throughout the course of the fishery in predicting a terminal run size that was less than the preseason forecast of 30,000 fish. Weekly inseason run projections ranged from 18,300 to 22,700 Chinook salmon. The final postseason estimate run size estimate of 19,800 large Chinook salmon indicated only base level and assessment/test fishery harvests were permitted.

The 2011 run size of Stikine River coho salmon cannot be quantified. The U.S. terminal harvest of Stikine River coho salmon is also unknown since there is no stock identification program for this species. Mixed stock coho salmon harvest in District 106 was 118,000 fish (50% Alaska hatchery) and District 108 harvest was 18,600 fish (11% Alaska hatchery) and both were below average. The Canadian inriver coho salmon harvest of 5,800 fish was well above average. The aerial survey count of 2,500 fish from six index sites combined was below average. The cumulative CPUE observed in the coho test fishery was also below average.

Taku River

The final postseason estimate of the 2011 Taku River sockeye salmon terminal run was 211,700 fish; 201,900 wild fish and 9,900 enhanced fish. The U.S. harvested 66,100 wild fish and Canada harvested 22,300 wild fish and the estimated above border spawning escapement was 113,000 wild fish. The terminal run size was average; however, the escapement was above the escapement goal range of 71,000 to 80,000 fish. The U.S. harvested an estimated 66% of the U.S. AC and Canada harvested an estimated 84% of the Canadian AC.

The harvest of large Chinook salmon in the Canadian commercial fishery in the Taku River was 2,342 fish. The Canadian Aboriginal fishery in the Taku River harvested 150 large Chinook salmon. The District 111 traditional drift gillnet fishery harvested 518 large Taku River Chinook salmon. The estimate for large Taku River Chinook salmon escapement was 27,523 fish, while the inriver and terminal run estimates were 30,800 and 31,939 fish, respectively.

The estimated above border run of Taku River coho salmon in 2011 is 83,400 fish, which is below average. The Canadian inriver commercial and test fishery harvest was 12,500 coho salmon. After Canadian harvests are subtracted from the above border run, the above border-spawning escapement is estimated at 70,900 coho salmon, which exceeds the minimum above border inriver run of 38,000 fish. The U.S. harvest was 27,600 coho salmon in the District 111 traditional fishery. Alaskan hatcheries contributed an estimated 2,100 fish or 8% of the District 111 harvest.

Alsek River

The Alsek River sockeye salmon harvest of 24,200 fish in the U.S. commercial fishery was above average. The Canadian inriver harvest was 600 sockeye salmon for Klukshu River and 2,100 fish aboriginal harvest with harvests not reported for Village Creek. The Klukshu River weir count of 21,400 sockeye salmon was above average and above the escapement goal range of 7,500 to 15,000 fish. The count of 5,600 early run sockeye salmon (count through August 15) and the late run count of 15,800 were both above average.

The U.S. Dry Bay harvest of 550 large Chinook salmon was average. The Canadian recreational fishery harvest of 100 fish and aboriginal harvest of 120 were both average. The 1,670 Chinook salmon counted through the Klukshu River weir was average and within the escapement goal range of 1,100 to 2,300 Chinook salmon.

Current stock assessment programs prevent an accurate comparison of the Alsek River coho salmon run with historical runs. The U.S. Dry Bay harvest was 1,600 coho salmon and the Canadian inriver aboriginal fishery harvest was 30 fish. The count through the Klukshu weir was 2,100 coho salmon but counts of coho through this weir do not provide a complete enumeration or consistent index since the weir is removed before the run is over and dates of removal are not standardized.

Enhancement

Eggs and milt were collected from the year 2011 sockeye salmon escapements at Tahltan and Tatsamenie lakes. A total of 6.5 million eggs were collected at Tahltan Lake and 2.2 million at Tatsamenie Lake. Fecundities were higher than expected at the two lakes resulting in more eggs than expected based on the number of females.

Outplants of 2010 brood year sockeye salmon fry in May and June 2011 were as follows: 1.235 million fry into Tahltan Lake; 1.245 million fry into Tuya Lake; and 1.6 million fry into Tatsamenie Lake. Green-egg to stocked-fry survivals were 40%, 44%, and 84% for the Tahltan, Tuya, and Tatsamenie, respectively. Survivals were lower for the Tahltan Lake stock due to loss of 11 of 25 incubators due to IHN. Numerically 43% of the eggs collected were lost due to IHN.

The IHN losses were the highest in the programs history; however, the cumulative losses since 1989 are consistent with the history of sockeye salmon culture in Alaska. The enhancement subcommittee will be continuing to assess these losses and any future ones with regard to any changes in techniques that may be necessary to safeguard against this pathogen.

The egg incubation and thermal marking program was continued at Snettisham Hatchery in 2010 and 2011. Snettisham hatchery is operated by DIPAC, a private aquaculture organization in Juneau. A cooperative agreement between ADFG and DIPAC provides for Snettisham hatchery to serve the needs of the joint TBR enhancement projects.

Adult sockeye salmon otoliths were processed inseason by the ADFG otolith lab to estimate the weekly contribution of fish from U.S./Canada TBR fry stocking programs to the District 106, 108, and 111 gillnet fisheries and to Canadian commercial fisheries in the Stikine and Taku rivers. Contribution estimates of stocked fish to Alaskan harvest were 35,000 stocked Stikine River fish to District 106 and 108, and 5,600 stocked Taku River fish to District 111. Contribution estimates of Canadian fisheries included 26,100 stocked fish to Stikine River fisheries and 1,800 stocked fish to the Taku River fisheries.

ESTIMATES OF TRANSBOUNDARY RIVER SALMON PRODUCTION, HARVEST AND ESCAPEMENT AND A REVIEW OF JOINT ENHANCEMENT ACTIVITIES IN 2012

TCTR (15-4) – April 2015

Final postseason estimates of harvests and escapements of Pacific salmon returning to the transboundary Stikine, Taku, and Alsek rivers for 2012 are presented and compared with historical patterns. Average, unless defined otherwise, refers to the most recent 10-year average; 2002–2011. Relevant information pertaining to the management of appropriate U.S. and Canadian fisheries is presented and the use of inseason management models is discussed. Final results from TBR sockeye salmon Oncorhynchus nerka enhancement projects are also reviewed.

Stikine River

The 2012 Stikine River sockeye salmon terminal run was estimated at 124,300 fish, of which 63,600 fish were harvested in various fisheries including test fisheries. An estimated 47,300 Stikine River fish escaped to spawn and an additional 13,600 fish migrated to the Tuya River block and were not harvested. The run was below average and the harvest was below average. The Tahltan Lake sockeye salmon escapement of 13,600 fish was below the escapement goal range (18,000 to 30,000 fish). The estimated U.S. commercial fishery harvest (Districts 106 and 108) and the Stikine River U.S. subsistence fishery of Stikine River sockeye salmon was 28,700 fish. The Canadian inriver commercial harvest was 26,400 fish and aboriginal fishery harvests was 4,000 fish. The inriver test fisheries harvested 4,100 sockeye salmon and there was no marine test fishery for sockeye salmon in 2012. Weekly inseason run predictions from the Stikine Management Model (SMM) ranged from 118,600 to 152,300 sockeye salmon; the final inseason model prediction was 120,600 fish, with a TAC of 43,600 fish. Weekly inseason run projections using other methods ranged from 111,600 to 166,700 sockeye salmon. The final postseason terminal run size based was 124,300 fish with a TAC of 41,500 fish. Based on the final postseason run size estimate the TAC estimate for each country was 20,800 Stikine River fish, Canada harvested 146% and the U.S. harvested 138% of their respective TACs. Broodstock collection removed 4,000 fish and otolith sampling removed 200 fish from the escapement to Tahltan Lake leaving a natural spawning escapement of 9,500 fish. The estimated spawning escapement of 33,800 mainstem Stikine River sockeye salmon was within the goal range of 20,000 to 40,000 fish for this stock group.

The 2012 Stikine River large Chinook salmon terminal run was estimated at 29,900 fish using postseason CWT and GSI analyses to separate non-Stikine fish in the District 108 terminal area fisheries, of which 7,600 fish were harvested in various fisheries. An estimated 22,300 Stikine River fish escaped to spawn, above the escapement target of 17,400 Chinook salmon, but within the escapement goal range of 14,000 to 28,000 large

Chinook salmon. The run and harvest were both below average. The Little Tahltan River large Chinook salmon escapement of 700 fish was below the Canadian escapement target of 3,300 fish and below the lower bound of the Canadian target range of 2,700 to 5,300 Chinook salmon. The estimated U.S. harvest of Stikine River large Chinook salmon in Districts 108 gillnet, test, troll, subsistence, and sport fisheries was 2,400 fish. The estimated Canadian commercial, aboriginal, test, and sport fisheries harvest was 5,200 fish. Managers used harvest in the MR, model, and other assessment estimates to generate inseason run sizes after SW 22. The inseason run projections were consistent throughout the course of the fishery in predicting a terminal run size that was less than the preseason forecast of 40,800 fish. Weekly inseason run projections ranged from 21,000 to 33,600 Chinook salmon.

The 2012 run size of Stikine River coho salmon cannot be quantified. The U.S. marine harvest of Stikine River coho salmon is also unknown since there is no stock identification program for this species. Mixed stock coho salmon harvest in Districts 106 was 121,400 (55% Alaska hatchery) and District 108 was and 19,900 (24% Alaska hatchery) fish; both below average. The Canadian inriver coho salmon harvest of 6,200 fish was above average. The annual stream surveys conducted by Canada were aborted due to inclement weather. The cumulative CPUE observed in the coho salmon test fishery was slightly below average.

Taku River

The final postseason estimate of the 2012 Taku River sockeye salmon terminal run is 207,600 fish; 193,600 wild fish and 14,000 hatchery fish. The U.S. harvested 46,600 wild fish and Canada harvested 27,000 wild fish and the estimated above border spawning escapement was 120,000 wild fish. The run size was above average as was the escapement which was well above the escapement goal range of 71,000 to 80,000 fish. The U.S. harvested an estimated 48% of the U.S. AC and Canada harvested an estimated 55% of the Canadian AC.

Estimates for Taku River large Chinook salmon are 19,540 spawning escapement, 22,500 above border run, and 23,870 terminal run using postseason CWT and GSI analyses to separate out non-Taku River fish in the District 111 terminal area fisheries. The harvest of large Chinook salmon in Canadian commercial, aboriginal, and recreational fisheries in the Taku River was 2,100 fish. An additional 860 large Chinook salmon were taken in a test fishery. The District 111 traditional gillnet fishery harvest of 1,290 large Chinook salmon was below average and approximately 23% of the harvest was estimated to be of Alaska hatchery origin. In the Juneau area recreational fishery around 1,500 large Chinook salmon were harvested, one-third of which were Alaska hatchery origin.

The estimated above border run of Taku River coho salmon in 2012 is 61,800 fish, which is below average. The Canadian inriver commercial and test fishery harvest of 14,100 coho salmon was above average. After Canadian harvests are subtracted from the above border run, the above border spawning escapement is estimated at 70,800 coho salmon which exceeds the minimum above border inriver run of 38,000 fish stipulated in the Treaty. The U.S. harvest of 23,700 coho salmon in the District 111 traditional fishery was below average. Alaskan hatcheries contributed an estimated 600 fish or 2% of the District 111 harvest.

Alsek River

The Alsek River harvest of 18,200 sockeye salmon in the U.S. commercial fishery was above average. The Canadian inriver harvest was 500 sockeye salmon for the Klukshu River, 1,700 sockeye salmon for aboriginal harvest, and no harvest reported for Village Creek. The Klukshu River weir count of 17,700 sockeye salmon was above average and the escapement goal range of 7,500 to 15,000 fish.

The Chinook salmon run to the Alsek River appeared to be well below average. The U.S. Dry Bay harvest of 510 large Chinook salmon was average. The Canadian recreational fishery harvest of 85 fish was near average and the Aboriginal harvest was thought to have been minimal due to the poor return to the Klukshu River.

The 700 Chinook salmon counted through the Klukshu River weir was below average and below the escapement goal range of 1,100 to 2,300 Chinook salmon.

Current stock assessment programs prevent an accurate comparison of the Alsek River coho salmon run with historical runs. The U.S. Dry Bay harvest of 500 coho salmon was below average. There was no recorded harvest in the Canadian recreational and aboriginal fisheries. The operation of the Klukshu weir does not provide a complete enumeration of coho salmon into this system since it is removed before the run is over.

Enhancement

Eggs and milt were collected from the 2012 sockeye salmon escapements at Tahltan and Tatsamenie lakes. A total of 5.2 million eggs were collected at Tahltan Lake, and 2.0 million at Tatsamenie Lake. The egg-take goal of 6 million at Tahltan Lake was not achieved due to a low escapement.
Outplants of 2011 brood year sockeye salmon fry in May and June 2012 were as follows: 2.126 million fry into Tahltan Lake; 1.596 million fry into Tuya Lake; and 1.891 million fry into Tatsamenie Lake. Green-egg to planted-fry survivals were 63%, 52%, and 86% for the Tahltan, Tuya, and Tatsamenie, respectively. Survivals were lower for the Tahltan Lake stock due to loss of 7 of 26 incubators due to IHN (27% of the eggs collected).

IHN losses were the second highest in the programs history and the cumulative losses since 1989, at 9%, are slightly higher than average for sockeye salmon culture in Alaska. The 2012 disease history samples for Tahltan were the highest in the programs history with 97% positive. The enhancement subcommittee will be continuing to assess these losses and any future ones with regard to any changes in techniques that may be necessary to safeguard against this pathogen.

The egg incubation and thermal marking program was continued at Snettisham Hatchery in 2011 and 2012. Snettisham hatchery is operated by DIPAC, a private aquaculture organization in Juneau. A cooperative agreement between ADFG and DIPAC provides for Snettisham hatchery to serve the needs of the joint TBR enhancement projects.

Adult sockeye salmon otoliths were processed inseason by the ADFG otolith lab to estimate weekly contribution of fish from U.S./Canada TBR fry stocking programs to Districts 106, 108, and 111 gillnet fisheries and to Canadian commercial fisheries in the Stikine and Taku rivers. Estimates of contributions of stocked fish to Alaskan commercial harvests were 10,500 stocked Stikine River fish to District 106 and 108, and 4,400 stocked Taku River fish to District 111. Estimates of contributions to Canadian fisheries included 11,900 stocked fish to Stikine River fisheries and 3,100 stocked fish to the Taku River fisheries.

FINAL ESTIMATES OF TRANSBOUNDARY RIVER SALMON PRODUCTION, HARVEST AND ESCAPEMENT AND A REVIEW OF JOINT ENHANCEMEN ACTIVITIES IN 2013

TCTR (15-5) – April 2015

Final estimates of harvests and escapements of Pacific salmon returning to the transboundary Stikine, Taku, and Alsek rivers for 2013 are presented and compared with historical patterns. Average, unless defined otherwise, refers to the most recent 10-year average (2002–2011). Relevant information pertaining to the management of appropriate U.S. and Canadian fisheries is presented and the use of inseason management models is discussed. Preliminary results from TBR sockeye salmon Oncorhynchus nerka enhancement projects are also reviewed.

Stikine River

The 2013 Stikine River sockeye salmon run was estimated to be 113,500 fish, of which 65,500 fish were harvested in various fisheries including test fisheries. An estimated 48,000 Stikine River fish escaped to spawn, including 5,100 fish that migrated to the Tuya River block that were not harvested. The run and harvest were both well below average. The Tahltan Lake sockeye salmon escapement of 15,800 fish was below the goal range (18,000 to 30,000 fish). The estimated U.S. commercial harvest of Stikine River sockeye salmon in Districts 106 and 108 and the U.S. Stikine River subsistence fishery was 29,100 fish. The Canadian inriver commercial harvest was 24,300 fish and Aboriginal fishery harvest was 7,500 fish. The inriver test fisheries harvested 1,300 sockeye salmon and there was no marine test fishery for sockeye salmon in 2013. Weekly inseason run projections from the SMM ranged from 112,700 to 159,600 sockeye salmon; the final inseason model prediction was 112,700 fish, with a total allowable catch (TAC) of 42,700 fish. Weekly inseason run projections using other methods ranged from 106,100 to 150,200 sockeye salmon. Based on the postseason run size estimate 113,500 the TAC estimate was 22,600 Stikine River fish for each country; Canada harvested 145% and the U.S. harvested 129% of their respective TACs. Broodstock collection removed 3,200 sockeye salmon from the escapement to Tahltan Lake leaving a natural spawning escapement of 12,600 fish. The estimated spawning escapement of 27,100 mainstem Stikine River sockeye salmon was within the goal range of 20,000 to 40,000 fish for this stock group.

The 2013 Stikine River large Chinook salmon run was estimated at 20,200 fish, of which 5,000 fish were harvested in various fisheries. An estimated 16,700 Stikine River large Chinook salmon escaped to spawn, close to the escapement point of 17,400 large Chinook salmon (escapement goal range 14,000 to 28,000). The run and harvest were both below averages. The Little Tahltan River large Chinook salmon escapement of 880 fish was below the Canadian escapement target of 3,300 fish and below the lower bound of the Canadian target range of 2,700 to 5,300 Chinook salmon. The estimated U.S. harvest of Stikine River large Chinook salmon in Districts 108 gillnet, test, troll, subsistence, and sport fisheries was 1,500 fish. The estimated Canadian commercial, Aboriginal, test, and sport fisheries harvest was 3,700 fish. Managers used MR, model, and other assessment estimates to generate inseason run sizes after SW 22. The inseason run projections were consistent throughout the course of the fishery in predicting a total run size that was close to the preseason expectation of 22,400 fish. Weekly inseason run projections ranged from 20,300 to 24,800 Chinook salmon.

The 2013 run size of Stikine River coho salmon cannot be quantified. The U.S. marine harvest of Stikine River coho salmon is also unknown since there is no stock identification program for this species. Mixed stock coho salmon harvest in District 106 was 160,700 (59% Alaska hatchery) and District 108 was 43,700 (19% Alaska hatchery) fish, and were both above average. The Canadian inriver coho salmon harvest of 6,800 fish was above average. The annual stream surveys indicated a below average return to the six index sites; however, inseason weekly CPUE of coho salmon from both the lower Stikine River Canadian fishery and sockeye salmon test fishery (incidentally caught coho salmon) were record.

Taku River

The postseason estimate of the 2013 Taku River sockeye salmon run was 206,500 fish, 184,400 wild fish and 22,100 enhanced fish. The U.S. harvested 86,800 wild fish and Canada harvested 21,200 wild fish and the estimated above border spawning escapement was 81,200 fish of which 76,500 were wild fish. The total run size was above average and the wild escapement was below average for the same time period but just above the escapement goal range of 71,000 to 80,000 fish. The U.S. harvested an estimated 103% of the wild AC and Canada harvested an estimated 84% of the wild AC. The U.S. harvested an estimated 99% of the TAC and Canada harvested an estimated 83% of the TAC.

The harvest of large Chinook salmon in Canadian commercial, Aboriginal, and recreational fisheries in the Taku River was 740 fish. Due to a low preseason terminal run forecast, a nonlethal test fishery was initiated where crews from both countries ran drift gillnets to sample fish for tags released from Canyon Island as well as mark additional fish for recapture on the spawning grounds. The traditional District 111 mixed stock drift gillnet fishery total harvest of 1,210 Chinook salmon was below average even when excluding those years in which a directed Chinook salmon fishery occurred. In the Juneau area recreational fishery, around 2,000 large Chinook salmon were harvested, 65% of which were Alaska hatchery origin. Postseason Taku River large Chinook salmon spawning escapement estimate was 18,000 fish, the above border run estimate was 18,740 fish, and the terminal run estimate was 19,350 fish.

The estimated above border run of Taku River coho salmon in 2013 was 78,500 fish, which was below average. The Canadian inriver commercial harvest of 10,260 coho salmon was above average. After Canadian harvests were subtracted from the above border run the above border spawning escapement was estimated at 68,100 coho salmon, which exceeds the PST minimum above border run of 38,000 fish, and is equal to the 70,000 fish escapement target managed for until a bilateral escapement goal is finalized. The U.S. harvest of 51,000 coho salmon in the traditional District 111 mixed stock fishery was above average. Alaskan hatcheries contributed an estimated 7,500 fish or 15% of the District 111 harvest.

Alsek River

The Alsek River harvest of 7,500 sockeye salmon in the U.S. commercial fishery was well below average. The Canadian inriver harvest was 100 sockeye salmon for the Klukshu River and 500 fish from Aboriginal harvests with no catches reported for Village Creek. The Klukshu River weir count of 3,900 sockeye salmon was below average and below the escapement goal range of 7,500 to 11,000 fish. The count of 300 early run sockeye salmon (i.e. through August 15) and the late run count of 3,600 were both well below average.

The Chinook salmon run to the Alsek River was average. The U.S. Dry Bay harvest of 470 large Chinook salmon was near average. The Canadian recreational fishery harvest of 5 fish was below average and the Aboriginal harvest of 70 fish was average. The 1,300 Chinook salmon counted through the Klukshu River weir was average and above the escapement goal range of 800 to 1,200 Chinook salmon.

Current stock assessment programs prevent an accurate comparison of the Alsek River coho salmon run with historical runs. There was minimal effort during the U.S. Dry Bay coho salmon fishery and harvest figures are negligible. The Canadian recreational fishery harvested 23 coho salmon and there was no recorded harvest in the Aboriginal fisheries. The operation of the Klukshu weir does not provide a complete enumeration of coho salmon into this system since it is removed before the run is over

Enhancement

In 2013, eggs and milt were collected from sockeye salmon escapements at Tahltan and Tatsamenie lakes. A total of 4.4 million eggs were collected at Tahltan Lake, and 1.7 million at Tatsamenie Lake. The egg-take goal of 6 million at Tahltan Lake was not achieved due to low escapement. The egg-take goal of 2 million at Tatsamenie Lake was not achieved due to a failure in the holding pens which allowed broodstock to escape very late in the egg take. Aging twine that held the pens panels together gave way allowing fish to push through the seam.

In 2013, outplants of broodyear 2012 sockeye salmon fry were as follows: 1.349 million fry into Tahltan Lake; 755,000 fry into Tuya Lake; 1.636 million fry into Tatsamenie Lake; and 197,000 fry into King Salmon Lake. Green-egg to stocked-fry survivals were 37%, 39%, 89%, and 85% for Tahltan, Tuya, Tatsamenie, and King Salmon Lake respectively. Survivals were lower for Tahltan Lake stock due to IHN loss and a water flow interruption at the hatchery. An estimated 1.06 million pre-emergent fry from five Tahltan Lake stock incubators were confirmed positive with IHN and destroyed. Of these, 352,000 were destined for Tahltan Lake and 711,000 for Tuya Lake. Another two incubators with a combined total of 345,000 pre-emergent fry were lost when water flow to the incubators was unintentionally turned off. There were no IHN losses in either Tatsamenie Lake or King Salmon Lake stock this year.

In 2012, IHN losses were the third highest in the program's history, following broodyear 2010 and 2011. The cumulative losses since 1989 is 10%, which is slightly higher than average for sockeye salmon culture in Alaska. The 2013 disease history samples for Tahltan were very similar to 2012. The 2013 samples were 95% positive, compared to the 2012 samples which were 97% positive, the highest in the programs history. However, the 2013 samples had a lower proportion of high tittered fish, 61% compared to the 83% high titer fish in 2012. The enhancement subcommittee will be continuing to assess these losses and any future ones with regard to any changes in techniques that may be necessary to safeguard against this pathogen.

Adult sockeye salmon otoliths were processed inseason by the ADF&G otolith lab to estimate weekly contribution of fish from US/Canada TBR fry stocking programs to District 106, 108, and 111 gillnet fisheries and to Canadian commercial fisheries in the Stikine and Taku rivers. Contribution estimates of stocked fish to Alaskan harvest were 9,100 stocked Stikine River fish to District 106 and 108, and 12,800 stocked Taku River fish to District 111. Contributions estimates of stocked fish to Canadian fisheries included 14,300 stocked fish to Stikine River fisheries and 4,000 stocked fish to the Taku River fisheries.

F. JOINT TECHNICAL COMMITTEE ON DATA SHARING

No reports were finalized for publication during this reporting period.

G. JOINT SELECTIVE FISHERY EVALUATION COMMITTEE

REVIEW OF MASS MARKING AND MARK-SELECTIVE FISHERY ACTIVITIES PROPOSED TO OCCUR IN 2014

SFEC (15)-2 - July 2015

This report provides a summary of the proposed coastwide plans for mass marking (MM) of Coho and Chinook salmon and the conduct of mark-selective fisheries (MSFs) in 2014. Issues with implications for maintenance of the coastwide coded-wire tag program are identified and recommendations are proposed.

Summary of 2014 Mass Marking Proposals

Throughout this report a mass-marked fish refers to a fish with an adipose fin clip and a double-index tag (DIT) group includes two related coded-wire tag (CWT) groups, one marked and one unmarked. The terms 'marked' and 'clipped', and likewise 'unmarked' and 'unclipped', are used interchangeably.

Mass Marking and DIT Programs

Twenty-three proposals (8 for Coho and 15 for Chinook) were received for mass marking (MM) occurring in 2014 (Appendix E). Of these, one was received from southern British Columbia (BC) and 22 from southern United States (US). The Selective Fishery Evaluation Committee (SFEC) believes these proposals cover all MM programs of relevance to the Pacific Salmon Commission (PSC).

Within the MM proposals received from southern BC and southern US, approximately 34 million Coho are proposed to be mass-marked in 2014 (Table 2-1; Figure 2-1A), a level comparable to that proposed in 2013. Essentially all hatchery Coho production intended for harvest, from southern BC and southern US hatcheries will be mass marked. Currently there are 18 proposed Coho salmon DIT groups (Table 2-1), of which two will be released from southern BC, seven from Puget Sound, five from the Washington (WA) coast, and four from the Columbia River Basin. These DIT groups are unchanged from the 2013 proposals.

Approximately 119 million Chinook are proposed to be mass marked in 2014 from southern US Chinook hatcheries (Table 2-1; Figure 2-1B). This is approximately five million more than were proposed for 2013. Most all hatchery Chinook production from southern US hatcheries intended for harvest will be mass marked. Currently there are 14 proposed Chinook salmon DIT groups (Table 2-1, Appendix H), of which seven are from Puget Sound facilities, two from coastal facilities, and five from Columbia River facilities. The number of DIT groups is unchanged from the 2013 proposals; however, CDFO discontinued the Fraser River DIT with the 2011 brood and WDFW is proposing a new DIT program at Priest Rapids.

Sampling Programs

Assuming recent exploitation rates and sampling programs, the SFEC estimates the proposed mass marking of Coho stocks in 2014 will result in annual encounters of untagged marked Coho in sampling programs of approximately 300 Coho in Alaska (AK) and 4,100 Coho in Canada (Table 2-4). For southern US Chinook stocks, annual encounters of untagged marked Chinook in sampling programs are projected to be approximately 10,200 Chinook in AK, 19,000 Chinook in Canada, and 200 Chinook in California (Table 2-4).

Prior to MM, the adipose fin clip was employed as a visual indicator for fish containing a CWT. Consequently, sampling programs designed to collect heads from fish with missing adipose fins were appropriate for obtaining CWT samples. With MM, a large number of marked fish do not contain CWTs; further, CWTs must be recovered from both marked and unmarked fish to obtain data for DIT releases to estimate fishery impacts. Electronic tag detection (ETD) equipment has been developed as a means to efficiently identify marked and unmarked fish containing CWTs. However, ETD is not employed coastwide because of continuing reservations by some agencies regarding the cost, accuracy, and practical feasibility of incorporating this technology into their sampling programs. The Alaska Department of Fish and Game (ADFG), Canadian Department of Fisheries and Oceans (CDFO), Oregon Department of Fish and Wildlife (ODFW), and California Department of Fish and Wildlife (CDFW) all conduct sampling programs which will not recover the unclipped component of DIT groups required to assess impacts of MSFs. Unsampled fisheries from which unmarked DIT CWT recoveries should have been observed create gaps in analyses of fishery impacts on unmarked (wild) fish.

Considering sampling programs coastwide, some agencies already implement comprehensive electronic sampling strategies to recover CWTs from sport and commercial fisheries, while other agencies are still working to increase use of ETD. Washington State continues to fully implement electronic sampling statewide and consistently reports CWT recoveries of the unmarked components of DIT groups in their fisheries. Starting in 2008, Canada also committed to full electronic sampling and reporting of all CWTs in all commercial fisheries for Chinook. Coho in Canadian commercial fisheries are visually sampled, except for heads delivered by northern 'freezer' trollers, which are electronically sampled. Canada continues to rely on the Sport Head Recovery Program (SHRP) to recover CWTs from marked fish in NSFs and MSFs alike and thus no unmarked coded-wire-tagged recoveries are available from them. Oregon Department of Fish and Wildlife continues to use visual sampling for fall Chinook and electronic sampling for spring Chinook and Coho in the Columbia River. Beginning in 2011, ODFW initiated electronic sampling of all ocean recreational and commercial salmon fisheries off the coast of Oregon (OR).

Encounters of large numbers of mass-marked Chinook are increasingly impacting catch sampling programs in northern fisheries; for example, approximately 68% of the Chinook caught in 2013 in the southeast Alaskan troll fishery with a missing adipose fin did not contain a CWT (Figure 2-3). The increased costs to deal with the additional marked fish (e.g., storage, and shipping to and sorting of heads in the dissection laboratories) are not quantified, but will impact the programs.

A new type of wand, the "T-wand" is now available with a greater detection range. The manufacturer believes that if used correctly these wands should detect all CWTs and would no longer require "mouth-wanding" for Chinook.

Summary of 2014 Mark-Selective Fishery Proposals

MSFs have been prosecuted for Coho since 1998 and for Chinook since 2003. For 2014, the SFEC received 47 MSF proposals for Coho and Chinook salmon in CDFO, WDFW, IDFG, and ODFW fisheries. The SFEC believes these proposals cover all MSFs planned for 2014 of relevance to the PSC. Agencies provided the majority of the requested information in each of the proposals and the proposals were submitted on time. One proposal was received for a commercial Coho and Chinook MSF to occur in the lower Columbia River, 17 proposals were received for Coho Salmon MSFs, and 29 proposals were received for Chinook Salmon MSFs. Of these, two were new proposals from WDFW for Coho mark-selective fisheries in the Skagit and Samish rivers. All proposals submitted to the SFEC for review are listed in Table 3-1 (also see Appendix F). Further details describing the proposed MSFs and comments by the SFEC are provided in Table 3-3.

Up until 2008, Chinook MSFs were largely restricted to Puget Sound and Columbia River spring Chinook. Since then, Chinook MSFs have expanded substantially in marine and freshwater areas. In 2007, 12 Chinook MSFs were prosecuted; in 2010, that number doubled to 24 Chinook MSFs and a larger number of indicator stocks are now vulnerable to being encountered in MSFs.

The majority of MSF proposals are for terminal marine or freshwater areas, each of which will impact mature fish of one to several stocks. Multiple MSFs for both Coho and Chinook are also expected to occur in ocean areas in 2014 in BC, WA (WA ocean areas 1 through 4 and the Columbia River), and OR. These fisheries will impact many stocks and also multiple broods of Chinook. Table 3-4 and Table 3-5 each provide historical information on encounters of tagged and marked fish to identify Coho and Chinook tagged stocks that can be expected in these areas with MSFs.

Issues and Concerns

Post-season Reports

Post-season reports on MSFs are required for each MSF prosecuted. One of the basic functions of these reports is to provide a record of how fisheries were actually prosecuted (whether they took place) and whether there were any changes in the way the fisheries and sampling programs were conducted relative to the proposal. These reports are to be submitted in the form of two tables (Appendix I). The first table should be submitted by the annual PSC post-season meeting following the year of the fishery. No SFEC MSF post-season report/tables were found in the US or Canadian post-season reports (Jan 2014). Although these tables are not included in the PSC post-season reports, CDFO and WDFW do provide fishery regulations and preliminary landed catch estimates for mark-selective fisheries in their country's post-season reports. In addition, post season estimates for all Chinook MSFs in all WA marine waters (Areas 1–13) are available in the Recreational Angling Impact Database (RAID) hosted on the NWIFC's website. WDFW has also made available reports of some of their MSFs on their website.

Mixed-Bag Regulations

Regulations to implement MSFs are increasingly complex, making analyses to estimate impacts challenging in a number of ways. As MSFs expand, different types of mixed bag regulations are part of the MSFs proposed by Canada, Washington, and Oregon for recreational fisheries. The regulations include a range of rules that specify when and how anglers may retain various combinations of adult and juvenile marked and unmarked fish in their daily bag limits. The SFEC is not aware of reliable methods for estimating impacts on marked and unmarked fish under mixed bag regulations and the agencies proposing these mixed bag regulations should assist in developing the analytical tools to measure the impacts of these fisheries.

Recommendations and Issues Requiring PSC Direction

Proposal Review Process

It is recommended that the PSC request agencies to submit proposals for all potential 2015 MM and MSFs by November 2014, and for agencies to provide both preliminary and final post-season reports on the conduct of MSFs within the timeframe adopted by the PSC. Agencies need to prioritize these tasks so that proposals and MSF post-season reports are completed and submitted in a timely manner.

Interagency Coordination and Cooperation

Mass marking, double-index tagging, and CWT sampling programs continue to be insufficiently coordinated to support analysis by PSC technical committees. It is also not clear that agencies are collecting adequate and necessary data to permit estimation of unmarked CWT recoveries in fisheries and escapements so that cohort reconstructions can be carried out on the unmarked component of the DIT group releases. With the expansion of Chinook marine MSFs, the geographical range of electronic CWT sampling needs to be expanded and the number of double-index-tagged stocks needs to be increased. Specifically, ETD needs to be implemented by ODFW for Oregon Columbia River fall Chinook fisheries and escapement to recover DIT groups for Chinook indicator stocks. In addition, DIT groups should be added for the following Chinook stocks:

- Lower Columbia River tule fall Chinook (possibly Washougal);
- Columbia River summers (Wells Hatchery);
- Snake River fall subyearlings (Lyons Ferry Hatchery);
- Willamette Spring (reinstate DIT program with electronic terminal sampling);
- North Oregon Coast (Salmon River); and,
- Mid Oregon Coast.

The PSC should continue to support technical and policy processes to develop agreements to clarify responsibilities for maintaining a functional CWT system; these processes should build upon recommendations presented by the CWT Work Group in 2008.

REVIEW OF MASS MARKING AND MARK-SELECTIVE FISHERY ACTIVITIES PROPOSED TO OCCUR IN 2015

SFEC (16)-1 – January 2016

This report provides a summary of the proposed coastwide plans for mass marking (MM) of coho and Chinook salmon and the conduct of mark-selective fisheries (MSFs) in 2015. Issues with implications for maintenance of the coastwide coded-wire tag program are identified and recommendations are proposed.

Summary of 2015 Mass Marking Proposals

Throughout this report a mass-marked fish refers to a fish with an adipose fin clip and a double-index tag (DIT) group includes two related coded-wire tag (CWT) groups, one marked and one unmarked. The terms 'marked' and 'clipped', and likewise 'unmarked' and 'unclipped', are used interchangeably.

Mass Marking and DIT Programs

Twenty-one proposals (8 for coho and 13 for Chinook) were received for mass marking (MM) occurring in 2015 (Appendix E). Of these, one was received from southern British Columbia (BC) and 20 from southern United States (US). The Selective Fishery Evaluation Committee (SFEC) believes these proposals cover all MM programs of relevance to the Pacific Salmon Commission (PSC).

Within the MM proposals received from southern BC and southern US, approximately 34 million coho salmon are proposed to be mass-marked in 2015 (Table 2-1; Figure 2-1A), a level comparable to that proposed in 2014. Essentially all hatchery coho production intended for harvest, from southern BC and southern US hatcheries will be mass marked. Currently there are 16 proposed coho salmon DIT groups (Table 2-1; Appendix F), of which two will be released from southern BC, seven from Puget Sound, four from the Washington (WA) coast, and three from the Columbia River Basin. This is two fewer DIT groups than what was proposed in the 2014 proposals.

Approximately 117 million Chinook are proposed to be mass marked in 2015 from southern US Chinook hatcheries (Table 2-1; Figure 2-1B). This is approximately two million less than were proposed for 2014. Most all hatchery Chinook production from southern US hatcheries intended for harvest will be mass marked. Currently there are 14 proposed Chinook salmon DIT groups (Table 2-1, Appendix G), of which seven are from Puget Sound facilities, three from coastal facilities, and four from Columbia River facilities. The number of DIT groups is unchanged from the 2014 proposals; however, ODFW has discontinued the Big Creek Hatchery DIT and WDFW is proposing a DIT at the Naselle Hatchery.

Sampling Programs

Prior to MM, the adipose fin clip was employed as a visual indicator for fish containing a CWT. Consequently, sampling programs which were designed to collect heads from fish with missing adipose fins resulted in samples of heads, all which contained CWTs. With MM, a large number of marked fish do not contain CWTs; further, CWTs must be recovered from both marked and unmarked fish to obtain data for DIT releases to estimate fishery impacts. Electronic tag detection (ETD) equipment has been developed as a means to efficiently identify marked and unmarked fish containing CWTs. However, ETD is not employed coastwide because of continuing reservations by some agencies regarding the cost, accuracy, and practical feasibility of incorporating this technology into their sampling programs. The Alaska Department of Fish and Game (ADFG), Canadian Department of Fisheries and Oceans (CDFO), Oregon Department of Fish and Wildlife (ODFW), and California Department of Fish and Wildlife (CDFW) all conduct sampling programs which will not recover the unclipped component of DIT programs required to assess impacts of MSFs. Fisheries from which unmarked DIT recoveries should have been observed create gaps in analyses of fishery impacts on unmarked (wild) fish.

Considering sampling programs coastwide, some agencies already implement comprehensive electronic sampling strategies to recover CWTs from sport and commercial fisheries, while other agencies are still working to increase use of ETD. Washington State continues to fully implement electronic sampling statewide and consistently reports CWT recoveries of the unmarked components of DIT groups in recreational marine and some freshwater MSFs, as well as in non-selective fisheries (NSFs). Starting in 2008, Canada also committed to full electronic sampling and reporting of all CWTs in all commercial fisheries for Chinook. Coho salmon in Canadian commercial fisheries are visually sampled, except for heads delivered by northern 'freezer' trollers, which are electronically sampled. Canada continues to rely on the Sport Head Recovery Program (SHRP) to recover CWTs from NSFs and MSFs alike and thus, no unmarked coded-wire-tagged recoveries are available from them. Oregon Department of Fish and Wildlife continues to use visual sampling for fall Chinook and electronic sampling for spring Chinook and coho in the Columbia River. Beginning in 2011, ODFW initiated electronic sampling of all ocean recreational and commercial salmon fisheries off the coast of Oregon (OR).

Encounters of large numbers of mass-marked Chinook are increasingly impacting catch sampling programs in northern fisheries; for example, approximately 73% of the Chinook caught in 2014 in the southeast Alaskan troll fishery with a missing adipose fin did not contain a CWT (Figure 2-3). The increased cost to deal with the additional marked fish (e.g., storage, and shipping to and sorting of heads in the dissection laboratories) are not quantified, but will impact the programs.

Summary of 2015 Mark-Selective Fishery Proposals

Mark-selective fisheries have been prosecuted for coho since 1998 and for Chinook since 2003. For 2015, the SFEC received 63 MSF proposals for coho and Chinook salmon in ADFG, CDFO, WDFW, and ODFW fisheries. The SFEC believes these proposals cover all MSFs planned for 2015 of relevance to the PSC. The proposals submitted to the SFEC for review are listed in Table 3-1. Further details describing the proposed MSFs and comments by the SFEC are provided in Table 3-3.

Nineteen proposals were received for coho salmon MSFs to occur in 2015 and 44 proposals were received for Chinook Salmon MSFs. Agencies provided the majority of the requested information in each of the proposals and the proposals were submitted on time.

SFEC received one proposal for a new mark-selective fishery for Chinook salmon in the July-August coho salmon troll fishery.

Up until 2008, Chinook MSFs were largely restricted to Puget Sound and Columbia River spring Chinook. Since then, Chinook MSFs have expanded substantially in marine and freshwater areas. In 2007, 12 Chinook MSFs were prosecuted; in 2010, that number doubled to 24 Chinook MSFs and a larger number of indicator stocks are now vulnerable to being encountered in MSFs.

The majority of MSF proposals are for terminal marine or freshwater areas, each of which will impact mature fish of one to several stocks. Multiple MSFs for both coho and Chinook are proposed for ocean areas in 2015 in SEAK, BC, WA (WA ocean areas 1 through 4 and the Columbia River), and OR. These fisheries will impact many stocks and also multiple broods of Chinook. Table 3-4 and Table 3-5 each provide historical information on encounters of tagged and marked fish to identify coho and Chinook tagged stocks that can be expected in these areas with MSFs.

Issues and Concerns

Post-season Reports

Post-season reports on MSFs are required for each MSF prosecuted. One of the basic functions of these reports is to provide a record of how fisheries were actually implemented and whether there were any changes in the way the fisheries and sampling programs were conducted relative to the proposal. These reports are to be submitted in the form of three tables (Appendix H). The first two tables should be submitted by the annual PSC post-season meeting following the year of the fishery. No SFEC MSF post-season report/tables were found in the US or Canadian post-season reports (Jan 2015). Although these SFEC tables are not included in the PSC post-season reports, CDFO and WDFW do provide fishery regulations and preliminary landed catch estimates for mark-selective fisheries in these reports.

Mixed-Bag Regulations

Regulations to implement MSFs are increasingly complex, making analyses to estimate impacts challenging in a number of ways. Different types of mixed bag regulations are part of the MSFs proposed by Canada, Washington, and Oregon for recreational fisheries. As MSFs expand, a variety of types of mixed bag regulations are being proposed. The regulations include a range of rules that specify when and how anglers may retain various combinations of adult and juvenile marked and unmarked fish in their daily bag limits. The SFEC is not aware of reliable methods for estimating impacts on marked and unmarked fish under mixed bag regulations and the agencies proposing these mixed bag regulations should assist in developing the analytical tools to measure the impacts of these fisheries.

Recommendations and Issues Requiring PSC Direction

Proposal Review Process

It is recommended that the PSC request agencies to submit proposals for all potential 2016 MM and MSFs by November 2015, and for agencies to provide both preliminary and final post-season reports on the conduct of MSFs within the timeframe adopted by the PSC. Agencies need to prioritize these tasks so that proposals and MSF post-season reports are completed and submitted in a timely manner.

Interagency Coordination and Cooperation

Mass marking, double-index tagging, and CWT sampling programs continue to be insufficiently coordinated to support analysis by PSC technical committees. It is also not clear that agencies are collecting adequate and necessary data to permit estimation of unmarked CWT recoveries in fisheries and escapements so that cohort reconstructions can be carried out on the unmarked component of the DIT group releases. With the expansion of Chinook marine MSFs, the geographical range of electronic CWT sampling needs to be expanded and the number of double-index-tagged stocks needs to be increased. Specifically, ETD needs to be implemented by ODFW for Oregon Columbia River fall Chinook fisheries and escapement to recover DIT groups for Chinook indicator stocks. In addition, DIT groups should be added for the following Chinook stocks:

- Lower Columbia River tule fall Chinook (possibly Washougal);
- Columbia River summers (Wells Hatchery);
- Snake River fall subyearlings (Lyons Ferry Hatchery);
- Willamette Spring (reinstate DIT program with electronic terminal sampling);
- North Oregon Coast (Salmon River); and,
- Mid Oregon Coast.

The PSC should continue to support technical and policy processes to develop agreements to clarify responsibilities for maintaining a functional CWT system; these processes should build upon recommendations presented by the CWT Work Group in 2008.

H. HABITAT AND RESTORATION COMMITTEE

No reports were finalized for publication during this reporting period.

Publications of the Pacific Salmon Commission

PART VI
PUBLICATIONS OF THE PACIFIC SALMON COMMISSION

Documents listed herein are available to domestic fishery agencies of Canada and the United States, research organizations, libraries, scientists and others interested in the activities of the Commission, through the offices of the Secretariat, 600 - 1155 Robson Street, Vancouver, B.C., V6E 1B5. Photocopying charges may be levied for documents which are out of print.

Reports published by the Pacific Salmon Commission after March 31, 2000 including Commission annual reports, annual reports of the Fraser River Panel, Joint Technical Committee reports and technical reports of the Pacific Salmon Commission are also available in full text format on the Commission's website at www.psc.org.

Documents listed here are those which were published during the period from 2015/16 inclusive. For previous publications, please refer to the Pacific Salmon Commission's website at www.psc.org/publications.

A. ANNUAL REPORTS

No reports were finalized for publication during the reporting period.

B. REPORTS OF JOINT TECHNICAL COMMITTEES

i. Joint Chinook Technical Committee

TCCHINOOK (15)-1 V1 *2014 Exploitation Rate Analysis and Model Calibration*. July 2015

TCCHINOOK (15)-1 V2 *2014 Exploitation Rate Analysis and Model Calibration. Volume Two: Appendix Supplement*. July 2015.

TCCHINOOK (15)-2 *Annual Report of Catch and Escapement for 2014*. August 2015.

TCCHINOOK (16)-1 *Special Report: Investigation of Maturation-Rate Estimation Models and their Influence on PSC Chinook Model Abundance Indices*. February 2016.

ii. Joint Chum Technical Committee

TCCHUM (15)-1 *2012 Post Season Summary Report*. May 2015.

iii. Joint Coho Technical Committee

No reports were finalized for publication during the reporting period.

iv. Joint Data Sharing Technical Committee

No reports were finalized for publication during the reporting period.

v. Joint Northern Boundary Technical Committee

TCNB (15)-1 *U.S./Canada Northern Boundary Area 2014 Salmon Fisheries Management Report and 2015 Preliminary Expectations.* April 2015.

TCNB (16)-1 *U.S./Canada Northern Boundary Area 2015 Salmon Fisheries Management Report and 2016 Preliminary Expectations.* March 2016.

vi. Joint Transboundary Technical Committee

TCTR (15-1) *Salmon Management and Enhancement Plans for the Stikine, Taku and Alsek Rivers, 2015.* April 2015.

TCTR (15-3) *Estimates of Transboundary River Salmon Production, Harvest and Escapement and a Review of Joint Enhancement Activities in 2011.* April 2015.

TCTR (15-4) *Estimates of Transboundary River Salmon Production, Harvest and Escapement and a Review of Joint Enhancement Activities in 2012.* April 2015.

TCTR (15-5) *Final Estimates of Transboundary River Salmon Production, Harvest and Escapement and a Review of Joint Enhancement Activities in 2013.* April 2015.

vii. Selective Fishery Evaluation Committee

SFEC 15-2 *Review of Mass Marking and Mark-Selective Fishery Activities Proposed to Occur in 2014.* July 2015.

SFEC 16-1 *Review of Mass Marking and Mark-Selective Fishery Activities Proposed to Occur in 2015.* January 2016.

viii. Habitat and Restoration Committee

No reports were finalized for publication during the reporting period.

C. REPORTS OF THE FRASER RIVER PANEL

Report of the Fraser River Panel to the Pacific Salmon Commission on the 2010 Fraser River Sockeye Salmon Fishing Season. December 2015.

Report of the Fraser River Panel to the Pacific Salmon Commission on the 2011 Fraser River Sockeye Salmon Fishing Season. January 2016.

D. TECHNICAL REPORT SERIES OF THE PACIFIC SALMON COMMISSION

Pacific Salmon Commission Technical Report No. 34. *Lessons Learned Report: Mass Marking and Mark-Selective Fisheries.* Pacific Salmon Commission Selective Fishery Evaluation Committee. January 2016.

E. PUBLICATIONS BY PACIFIC SALMON COMMISSION SECRETARIAT STAFF

No reports were finalized for publication during the reporting period.

F. REPORTS OF THE INTERNATIONAL PACIFIC SALMON COMMISSION

Responsibility for maintenance of the library of the International Pacific Salmon Fisheries Commission, on its termination December 31, 1985, was transferred to the Pacific Salmon Commission. Documents in the Library include historical archival papers which are available to researchers and other interested parties through contact with the Pacific Salmon Commission's Librarian.

Publication of John F. Roos' History of the International Pacific Salmon Fisheries Commission, and P. Gilhousen's Estimation of Fraser River Sockeye Escapements ended all publication series of the International Pacific Salmon Fisheries Commission. Copies of all in-print Progress Reports and Bulletins of the International Pacific Salmon Fisheries Commission are available free of charge through the Library of the Pacific Salmon Commission. Copies of the History of the International Pacific Salmon Fisheries Commission may also be ordered through the Library of the Pacific Salmon Commission.

G. DOCUMENTS SUBMITTED BY THE PARTIES

In compliance with provisions of the Treaty, the Parties provide annual post-season fishery reports and updates on their respective salmonid enhancement programs to the Commission. Documents received during 2015/16 were:

1. *Post Season Report for 2015 Canadian Treaty Limit Fisheries*. Fisheries and Oceans Canada. January 4, 2016.
2. *2015 Post Season Report United States Salmon Fisheries of Relevance to the Pacific Salmon Treaty*. United States Section, Pacific Salmon Commission. January 4, 2016.

Report of the Auditors for 2015/2016

PART VII
AUDITORS' REPORT AND FINANCIAL STATEMENTS FOR THE PERIOD APRIL 1, 2015 TO MARCH 31, 2016

Financial Statements of

PACIFIC SALMON COMMISSION

Year ended March 31, 2016

KPMG LLP
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INDEPENDENT AUDITORS' REPORT

To the Commissioners of the Pacific Salmon Commission

We have audited the accompanying financial statements of the Pacific Salmon Commission, which comprise the statement of financial position as at March 31, 2016, the statements of operations and fund balances and cash flows for the year then ended, and notes, comprising a summary of significant accounting policies and other explanatory information. The financial statements have been prepared by management in accordance with the financial reporting provisions of Chapter IX of the Pacific Salmon Commission Bylaws amended and adopted February 11, 2016.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation of these financial statements in accordance with the financial reporting provisions of Chapter IX of the Pacific Salmon Commission Bylaws amended and adopted February 11, 2016; this includes determining that the basis of accounting is an acceptable basis for the preparation of these financial statements in the circumstances, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the entity's preparation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

KPMG LLP is a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity.
KPMG Canada provides services to KPMG LLP.

Opinion

In our opinion, the financial statements as at and for the year ended March 31, 2016 are prepared, in all material respects, in accordance with the financial reporting provisions of Chapter IX of the Pacific Salmon Commission Bylaws amended and adopted February 11, 2016.

Basis of Accounting

Without modifying our opinion, we draw attention to note 2(a) to the financial statements, which describes the basis of accounting. The financial statements are prepared to assist the Pacific Salmon Commission to meet the requirements of the Treaty between the Government of Canada and the Government of the United States of America concerning Pacific Salmon effective January 1, 2013. As a result, the financial statements may not be suitable for other purposes.

Restriction on Use

Our report is intended solely for the Commissioners and the Governments of Canada and the United States of America and should not be used by parties other than the Commissioners and the Governments of Canada and the United States of America.

KPMG LLP

Chartered Professional Accountants

September 28, 2016
Vancouver, Canada

PACIFIC SALMON COMMISSION

Statement of Financial Position
(Expressed in Canadian dollars)

March 31, 2016, with comparative information for 2015

		Restricted								
	General Fund	Working Capital Fund	Test Fishing Fund	Special Research and Project Fund	Capital Assets Fund	Yukon River Legacy Fund	Total	2016	2015
Assets									
Current assets:									
Cash	$ 1,878,910	$ -	$ -	$ 305,293	$ -	$ -	$ 305,293	$ 2,184,203	$ 1,379,467
Accounts receivable	109,149	877	753,724	103,783	-	4,168	862,552	971,701	265,770
Due from trust funds (note 6)	147,871	-	-	-	-	-	-	147,871	130,968
Prepaid expenses	502,067	-	-	-	-	-	-	502,067	30,225
Short-term investments	1,832,316	103,970	172,900	-	-	494,784	771,654	2,603,970	3,352,693
	4,470,313	104,847	926,624	409,076	-	498,952	1,939,499	6,409,812	5,159,123
Capital assets (note 4)	-	-	-	-	695,026	-	695,026	695,026	493,335
	$ 4,470,313	$ 104,847	$ 926,624	$ 409,076	$ 695,026	$ 498,952	$ 2,634,525	$ 7,104,838	$ 5,652,458
Liabilities and Fund Balances									
Current liabilities:									
Accounts payable	$ 859,029	$ -	$ -	$ -	$ -	$ -	$ -	$ 859,029	$ 854,541
Deferred revenue (note 3)	2,319,636	-	-	-	-	-	-	2,319,636	939,818
	3,178,665	-	-	-	-	-	-	3,178,665	1,794,359
Accrued employee future benefit liability (note 5)	580,929	-	-	-	-	-	-	580,929	554,864
Fund balances:									
Unrestricted	710,719	-	-	-	-	-	-	710,719	892,585
Restricted	-	104,847	926,624	409,076	-	498,952	1,939,499	1,939,499	1,917,315
Invested in capital assets	-	-	-	-	695,026	-	695,026	695,026	493,335
	710,719	104,847	926,624	409,076	695,026	498,952	2,634,525	3,345,244	3,303,235
	$ 4,470,313	$ 104,847	$ 926,624	$ 409,076	$ 695,026	$ 498,952	$ 2,634,525	$ 7,104,838	$ 5,652,458

See accompanying notes to financial statements.

Approved on behalf of the Commission:

W. Ron Allen

Chair, Standing Committee on Finance and Administration

Vice-Chair, Standing Committee on Finance and Administration

PACIFIC SALMON COMMISSION

Statement of Operations and Fund Balances
(Expressed in Canadian dollars)

Year ended March 31, 2016, with comparative information for 2015

	General Fund	Restricted							
		Working Capital Fund	Test Fishing Fund	Special Research and Project Fund	Capital Assets Fund	Yukon River Legacy Fund	Total	2016	2015
Revenue:									
Contributions from contracting parties (note 3)	$ 3,759,272	$ -	$ 750,000	$ -	$ -	$ -	$ 750,000	$ 4,509,272	$ 3,759,272
Grants	253,045	-	-	1,749,708	-	-	1,749,708	2,002,753	1,020,837
Interest	27,454	1,024	4,170	-	-	4,673	9,867	37,321	44,204
Administration fees	203,165	-	-	-	-	-	-	203,165	189,577
Other	23,683	-	-	-	-	-	-	23,683	48,040
Foreign exchange gain	35,986	-	-	-	-	-	-	35,986	161,412
Gain on disposal of capital assets	-	-	-	-	-	-	-	-	950
Test fishing	-	-	739,768	-	-	-	739,768	739,768	2,226,175
	4,302,605	1,024	1,493,938	1,749,708	-	4,673	3,249,343	7,551,948	7,450,467
Expenses:									
Amortization	-	-	-	-	145,013	-	145,013	145,013	144,713
Salaries and employee benefits	2,946,224	-	-	-	-	-	-	2,946,224	2,984,198
Travel and transportation	80,264	-	-	-	-	-	-	80,264	71,175
Rents and communication	119,443	-	-	-	-	-	-	119,443	123,720
Printing and reproductions	2,875	-	-	-	-	-	-	2,875	6,047
Contract services	638,758	-	-	-	-	-	-	638,758	703,393
Materials and supplies	36,034	-	-	-	-	-	-	36,034	62,116
Loss on disposal of capital assets	-	-	-	-	5,853	-	5,853	5,853	-
Test fishing	-	-	1,461,445	-	-	-	1,461,445	1,461,445	2,145,770
Consultations and workshops	-	-	-	2,074,030	-	-	2,074,030	2,074,030	1,952,467
	3,823,598	-	1,461,445	2,074,030	150,866	-	3,686,341	7,509,939	8,193,599
Excess (deficiency) of revenue over expenses	479,007	1,024	32,493	(324,322)	(150,866)	4,673	(436,998)	42,009	(743,132)
Fund balance, beginning of year	892,585	103,823	894,131	425,082	493,335	494,279	2,410,650	3,303,235	4,046,367
Interfund transfers	(660,873)	-	-	308,316	352,557	-	660,873	-	-
Fund balance, end of year	$ 710,719	$ 104,847	$ 926,624	$ 409,076	$ 695,026	$ 498,952	$ 2,634,525	$ 3,345,244	$ 3,303,235

See accompanying notes to financial statements.

PACIFIC SALMON COMMISSION

Statement of Cash Flows
(Expressed in Canadian dollars)

Year ended March 31, 2016, with comparative information for 2015

	2016	2015
Cash provided by (used in):		
Operations:		
Excess (deficiency) of revenue over expenses	$ 42,009	$ (743,132)
Items not involving cash:		
Amortization	145,013	144,713
Loss (gain) on disposal of capital assets	5,853	(950)
Accrued employee benefits	26,065	10,729
Net change in non-cash operating working capital	189,630	161,598
	408,570	(427,042)
Investing:		
Additions to capital assets	(353,347)	(251,224)
Proceeds on sale of capital assets	790	1,250
Redemption of short-term investments	3,352,693	3,352,365
Purchase of short-term investments	(2,603,970)	(3,352,693)
	396,166	(250,302)
Increase (decrease) in cash	804,736	(677,344)
Cash, beginning of year	1,379,467	2,056,811
Cash, end of year	$ 2,184,203	$ 1,379,467

See accompanying notes to financial statements.

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1. Nature of organization:

Pacific Salmon Commission (the "Commission") was established by a Treaty between the Governments of Canada and the United States of America (the "Contracting Parties") to promote cooperation in the management, research, and enhancement of Pacific Salmon stocks. The Treaty was ratified on March 18, 1985 and amended most recently on January 1, 2013.

2. Significant accounting policies:

(a) Basis of accounting:

These financial statements have been prepared in accordance with the financial reporting provisions of Chapter IX of the Pacific Salmon Commission Bylaws amended and adopted February 11, 2016 except for Chapter IX, Section 10, Rule 21 which goes into effect in the fiscal year ended March 31, 2017. The financial reporting provisions of Chapter IX of the Pacific Salmon Commission Bylaws amended and adopted February 11, 2016 require the financial statements to be prepared in a manner consistent with generally accepted accounting principles ("GAAP") with the following exceptions:

(*i*) Expenses are recognized at the time that the commitment for goods and services are made through purchase orders, rather than at the time the goods or services are received. This exception is to comply with Chapter IX, Section D, Rule 10 of the Bylaws.

(*ii*) The Commission uses the triennial pension valuation report provided by the International Fisheries Commissions Pension Society (IFCPS) to determine the yearly pension expense. The pension expense consists of the employer portion of the current service pension contribution plus any additional yearly payments required by the IFCPS (as shown in the current valuation report) that are necessary to extinguish the unfunded portion of the pension obligation. Other post-employment benefits such as extended medical plans and life insurance are recorded as an expense in the fiscal year in which the respective invoice is dated. This exception is to comply with Chapter IX, Section D, Rule 11 of the Bylaws.

Canadian GAAP has been interpreted to mean Canadian Accounting Standards for Not-for-Profit Organizations in Part III of the CPA Canada Handbook ("Not-for-Profit Standards").

(b) Fund accounting and revenue recognition:

The Commission follows the restricted fund method of accounting for contributions.

Restricted contributions related to general operations are initially deferred and recognized as revenue of the General Fund in the year in which the related expenses are incurred. All other restricted contributions are recognized as revenue of the appropriate restricted fund.

Unrestricted contributions are recognized as revenue of the General Fund in the year they are received or receivable, if the amount to be received can be reasonably estimated and collection is reasonably assured.

2. Significant accounting policies (continued):

(b) Fund accounting and revenue recognition (continued):

The Fund classifications are as follows:

(*i*) The General Fund includes funds provided annually through contributions from the Contracting Parties. By agreement of the Contracting Parties, any unexpended balance remaining at the end of one fiscal year may be used to offset contributions in the following year or may be used to offset a shortfall between contributions and approved expenses in the following year. As a result, all amounts are recognized as revenue once received or receivable.

(*ii*) The Working Capital Fund represents monies contributed by the Contracting Parties to be used on a temporary basis to satisfy the capital requirements of the Committee until receipt of new contributions from the Contracting Parties at the beginning of a fiscal year, or for special programs not contained in the regular budget but approved during the fiscal year. Any surplus above a pre-determined fixed limit in the account at the end of the fiscal year is transferred to the general fund and is treated as unrestricted income.

(*iii*) The Test Fishing Fund is established as a revolving fund in which a portion of net test fishing revenues realized in years of high abundance are reserved, to be used to support test fishing programs in years of low abundance and when conservation concerns are an issue.

(*iv*) The Special Research and Project Fund represents monies set aside to fund additional programs as determined by the Contracting Parties, including studies related to Coho Salmon, US Grant Funds for Chinook Technical Committee Support, Chinook Sentinel Stocks Program, Anadromous Fish Grant, Decline in Survival of Fraser River Sockeye, and the Killer Whale Workshop.

(*v*) The Capital Assets Fund reflects the Commission's capital asset transactions. Amortization is charged to the Capital Assets Fund.

(*vi*) The Yukon River Legacy Fund represents funds transferred to the Commission from the Yukon River Panel Society (the "Society"), upon the dissolution of the Society. The use of the funds is restricted to expenditures authorized by the Yukon River Panel.

Transfers between the funds are reviewed and approved by the Commissioners.

(c) Financial instruments:

Financial instruments are recorded at fair value on initial recognition. Freestanding derivative instruments that are not in a qualifying hedging relationship and equity instruments that are quoted in an active market are subsequently measured at fair value. All other financial instruments are subsequently recorded at cost or amortized cost, unless management has elected to carry the instruments at fair value. The Commission has not elected to carry any such financial instruments at fair value.

2. Significant accounting policies (continued):

(c) Financial instruments (continued):

Transaction costs incurred on the acquisition of financial instruments measured subsequently at fair value are expensed as incurred. All other financial instruments are adjusted by transaction costs incurred on acquisition and financing costs, which are amortized using the straight-line method.

Financial assets are assessed for impairment on an annual basis at the end of the fiscal year if there are indicators of impairment. If there is an indicator of impairment, the Commission determines if there is a significant adverse change in the expected amount or timing of future cash flows from the financial asset. If there is a significant adverse change in the expected cash flows, the carrying value of the financial asset is reduced to the highest of the present value of the expected cash flows, the amount that could be realized from selling the financial asset or the amount the Commission expects to realize by exercising its right to any collateral. If events and circumstances reverse in a future period, an impairment loss will be reversed to the extent of the improvement, not exceeding the initial carrying value.

(d) Capital assets:

Capital assets are stated at cost less accumulated amortization. Costs of repairs and replacements of a routine nature are charged as a current expense while those expenses which improve or extend the useful life of the assets are capitalized. Amortization is provided using the straight-line method as follows:

Asset	Rate
Automobiles	5 years
Boats	5 years
Computer equipment and software	3 years
Equipment	5 years
Furniture and fixtures	10 years
Leasehold improvements	Over life of lease

(e) Income taxes:

The Commission is a non-taxable organization under the Foreign Missions and International Organizations Act (1991).

2. Significant accounting policies (continued):

(f) Post-employment benefits:

(i) Pension plan:

The Commission has a defined benefit pension plan covering its employees. The benefits are based on years of service and final average salary. The Commission also sponsors a defined benefit life insurance and health care plan for substantially all retirees and employees. The Commission recognizes, annually, an expense equal to the amount of the required payment set forth by the pension plan, which is based on a triennial pension valuation. The Commission does not recognize an unfunded obligation related to the defined benefit pension plan, as referenced in note 5.

(ii) Severance, life insurance and medical benefits:

The severance, life insurance and medical benefits are accrued as the employees render services to earn the benefits, based on estimates of the expected future settlements.

(g) Foreign exchange translation:

Transactions originating in foreign currencies are translated at the exchange rate prevailing at the transaction dates. Assets and liabilities denominated in foreign currency at the year-end date are translated to equivalent Canadian amounts at the rate of exchange in effect at that date. Foreign exchange gains and losses resulting from translation are included in the determination of excess or deficiency of revenue over expenses.

(h) Use of estimates:

The preparation of financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Significant areas requiring the use of management estimates relate to the determination of the valuation of accounts receivable, useful lives of capital assets for amortization, the estimate of liabilities and contingencies, and the assumptions with respect to post-employment benefits. Actual results could differ from those estimates.

(i) Short-term investments:

The short-term investments are managed by an external investment manager and are recorded at face value plus accrued interest.

3. Related parties:

During the year ended March 31, 2016, the Commission recognized operating contributions from the Contracting Parties totaling $3,759,272 (2015 - $3,759,272). The Commission received nil (2015 - nil) of operating contributions from the Government of Canada and $1,879,636 (2015 - $939,818) of operating contributions from the Government of the United States of America relating to future periods. The Commission received $330,000 (2015 - nil) of contributions from the Government of Canada and $110,000 (2015 - nil) of contributions from the Government of the United States of America relating to future payments to International Fisheries Commission Pension Society for the unfunded pension liability. These amounts have been included in deferred revenue and will be recognized when the related expense has been incurred. The Commission also recognized $750,000 in contributions from the Government of Canada (2015 - nil) to supplement the Test Fishing Fund.

The Commission retains $66,964 (2015 - $179,772) of funds provided by Canada during 2006 to 2012, when the Larocque court decision required government funding in lieu of fish sales to fund test fishing operations in Canadian waters. Under the terms of the agreement, any unspent funds may be held by the Commission and used upon authorization from the Government of Canada to help fund test fishing operations administered by Fisheries and Oceans Canada in non-Panel area waters. The unspent amount of $66,964 has been recorded within accounts payable and accrued liabilities.

The office and warehouse premises of the Commission are provided by the Government of Canada at no charge.

Deferred revenue consists of unspent funds provided by the Contracting Parties that are reserved for future operating and capital expenditures of the Fund.

	2016	2015
Balance, beginning of year	$ 939,818	$ 1,409,818
Operating contributions received	4,699,090	3,289,272
Special contributions	440,000	-
Recognized as revenue	(3,759,272)	(3,759,272)
Balance, end of year	$ 2,319,636	$ 939,818

4. Capital assets:

March 31, 2016	Cost	Accumulated amortization	Net book value
Automobiles	$ 256,548	$ 207,816	$ 48,732
Boats	139,090	120,824	18,266
Computer equipment	624,238	519,468	104,770
Computer software	357,160	205,398	151,762
Equipment	1,668,582	1,384,591	283,991
Furniture and fixtures	374,994	297,446	77,548
Leasehold improvements	133,519	123,562	9,957
	$ 3,554,131	$ 2,859,105	$ 695,026

March 31, 2015	Cost	Accumulated amortization	Net book value
Automobiles	$ 247,159	$ 210,529	$ 36,630
Boats	138,026	120,383	17,643
Computer equipment	675,793	595,182	80,611
Computer software	286,417	206,233	80,184
Equipment	1,578,065	1,399,236	178,829
Furniture and fixtures	369,704	287,620	82,084
Leasehold improvements	133,519	116,165	17,354
	$ 3,428,683	$ 2,935,348	$ 493,335

5. Employee future benefits:

(i) Pension plan:

The Commission and its employees contribute to the Pension Plan of the International Fisheries Commissions Pension Society for Employees of Participating Commissions, a multi-employer defined benefit plan, with Headquarters in Canada. The Plan covers 78 employees, of which 41 are current or past employees of the Commission.

5. Employee future benefits (continued):

(i) Pension plan (continued):

The last actuarial valuation for the pension plan was performed as at January 1, 2014 and the next valuation is scheduled for January 1, 2017. The information noted below, will be updated once the results of the valuation become available. Selected information about the Commission's defined benefit plan is as follows:

	January 1, 2014
Fair value of plan assets	$ 9,218,000
Benefit obligation	11,084,000
Funded status - plan deficit	$ (1,866,000)

The funded status of the plan is not included in the statement of financial position.

A significant actuarial assumption adopted in measuring the Commission's benefit obligation is the use of a discount rate of 6% and expected rate of return on assets of 6%.

During the year ended March 31, 2016, the Commission made payments totaling $221,412 (2015 - $153,453) with respect to the unfunded pension obligation. This payment is recorded as an expense and included in salaries and employee benefits on the statement of operations and fund balances. The commission made a prepayment of $442,824 (2015 - nil) toward the future unfunded pension liability.

(ii) Severance, life insurance and medical benefits:

The Commission also provides employee future benefits including severance, life insurance and medical benefits. Employees are entitled to severance payments calculated based on the length of continuous service completed by the employee.

6. Trust funds:

The Commission administers and holds, in trust, the following funds, which are not included in the Commission's financial statements:

(a) Northern Boundary and Transboundary River Restoration and Enhancement Trust Fund and Southern Boundary and Transboundary River Restoration and Enhancement Trust Fund:

Northern Boundary and Transboundary River Restoration and Enhancement Trust Fund ("Northern Fund") was created by the Governments of the United States of America and Canada to manage their interests in the Commission to promote cooperation in the management, research and enhancement of Pacific Salmon stocks. The Northern Fund is a non-taxable organization under the Foreign Missions and International Organizations Act (1991) and is not subject to income tax. The income earned on these contributions is distributed by the Commission staff as directed by the Northern Fund Committee.

6. Trust funds (continued):

(a) (Continued):

Southern Boundary and Transboundary River Restoration and Enhancement Trust Fund ("Southern Fund") was created by the Governments of the United States of America and Canada to manage their interests in the Commission to promote cooperation in the management, research, and enhancement of Pacific Salmon stocks. The Southern Fund is defined as a non-taxable organization under the Foreign Missions and International Organizations Act (1991) and is not subject to income tax. The income earned on these contributions is distributed by the Commission staff as directed by the Southern Fund Committee.

During the fiscal year ended March 31, 2016, the Commission received funding for projects from the Northern Fund and Southern Fund totaling $1,679,148 (2015 - $706,804). During the year, the Northern Fund and Southern Fund paid $319,694 (2015 - $310,274) to the Commission for administrative services. As at March 31, 2016, the Commission had a receivable from the Northern Fund and Southern Fund of $134,090 (2015 - $124,262).

(b) Payroll Trust Funds:

The Commission administers and holds trust funds on behalf of the Government of the United States to distribute U.S. section salary under a Memorandum of Understanding. These amounts have been excluded from the statement of financial position and statement of operations and fund balances of the Commission.

(c) U.S. Expenditures Trust Funds:

The Commission administers and holds trust funds on behalf of the Government of the United States of America. They are to be expended at the direction of the Government of the United States of America. These amounts have been excluded from the statements of financial position and statement of operations and fund balances of the Commission.

(d) Yukon River Fund:

Under the terms of an interim Yukon River Salmon Agreement in 1995, the United States and Canada established the Yukon River Salmon Restoration and Enhancement ("R&E") Fund and the Commission created an account to hold associated monies. The R&E Fund and its governing Yukon River Panel were finalized in the 2002 Yukon River Salmon Agreement and associated treaty amendments. The Commission Secretariat administers and holds R&E trust funds on behalf of the Yukon River Panel. The Yukon River Panel provides direction on how the monies are to be disbursed from the Fund. These amounts have been excluded from the statements of financial position and statement of operations and fund balances of the Commission.

6. Trust funds (continued):

(d) Yukon River Fund (continued):

During the year, the R&E Fund paid $73,865 (2015 - $71,186) to the Commission for administrative services. As at March 31, 2016, the Commission had a receivable from the R&E Fund of $13,781 (2015 - $6,706) representing a reimbursement for expenses paid by the Commission on behalf of the R&E Fund.

(e) Summary of trust fund balances:

	Northern Fund	Southern Fund	Yukon River Fund	US Payroll Trust Funds	US Expenditure Trust Funds	Total 2016	Total 2015
Assets	$ 145,347,706	$ 118,189,975	$ 863,067	$ 302,593	$ 761,682	$ 265,465,023	$ 274,089,965
Liabilities	$ 209,238	$ 126,489	$ 15,265	$ 302 593	$ 761,682	$ 1,415,267	$ 2,800,033
Fund balances	145,138,468	118,063,486	847,802	-	-	264,049,756	271,289,932
	$ 145,347,706	$ 118,189,975	$ 863,067	$ 302,593	$ 761,682	$ 265,465,023	$ 274,089,965

	Northern Fund	Southern Fund	Yukon River Fund	US Payroll Trust Funds	US Expenditure Trust Funds	Total 2016	Total 2015
Fund balance, beginning of year	$ 149,290,471	$ 121,089,973	$ 909,488	$ -	$ -	$ 271,289,932	$ 239,270,627
Revenue	1,564,631	1,285,944	1,567,176	-	-	4,417,751	42,295,635
Expenses	5,716,634	4,312,431	1,628,862	-	-	11,657,927	10,276,330
	(4,152,003)	(3,026,487)	(61,686)	-	-	(7,240,176)	32,019,305
Fund balance, end of year	$ 145,138,468	$ 118,063,486	$ 847,802	$ -	$ -	$ 264,049,756	$ 271,289,932

	Northern Fund	Southern Fund	Yukon River Fund	US Payroll Trust Funds	US Expenditure Trust Funds	Total 2016	Total 2015
Cash flow provided by (used in):							
Operations	$ (559,570)	$ (48,901)	$ (1,559,165)	$ -	$ -	$ (2,167,636)	$ (540,632)

7. Contractual obligations:

The Commission has entered into a number of project grant contracts as at March 31, 2016 for the future funding of research projects to be completed subsequent to the year-end.

These contractual obligations are funded in installments and payments are due based on conditions included in the contract being satisfied. As such, no liability has been accrued in the financial statements as the Commission is not liable until these conditions have been met.

As at March 31, 2016, the research project contractual obligations are $270,737 (2015 - $573,489).

8. Financial instruments:

(a) Credit risk:

Credit risk is the risk that a third party to a financial instrument might fail to meet its obligations under the terms of the financial instrument. For cash and accounts receivable, the Commission's credit risk is limited to the carrying value on the statement of financial position. Management does not believe that the Commission is subject to any significant concentration of credit risk.

(b) Liquidity risk:

Liquidity risk is the risk that an entity will not be able to meet its obligations associated with financial liabilities.

The Commission manages liquidity risk by maintaining adequate cash and available credit facilities with its banking provider. The Commission monitors the cash flow to ensure a sufficient continuity of funding from the Contracting Parties.

(c) Interest rate risk:

The Commission is not exposed to significant interest risk as it does not have amounts payable that are charged interest.

Combined Financial Statements
(Expressed in Canadian dollars)

NORTHERN BOUNDARY AND TRANSBOUNDARY RIVER RESTORATION AND ENHANCEMENT TRUST FUND
and
SOUTHERN BOUNDARY RESTORATION AND ENHANCEMENT TRUST FUND

Year ended March 31, 2016

KPMG LLP
PO Box 10426 777 Dunsmuir Street
Vancouver BC V7Y 1K3
Canada
Telephone (604) 691-3000
Fax (604) 691-3031

INDEPENDENT AUDITORS' REPORT

To the Trustees of Northern Boundary and Transboundary River Restoration and
Enhancement Trust Fund and Southern Boundary Restoration and Enhancement Trust Fund (the "Trustees")

We have audited the accompanying combined financial statements of Northern Boundary and Transboundary River Restoration and Enhancement Trust Fund and Southern Boundary Restoration and Enhancement Trust Fund (the "Trusts"), which comprise the combined statement of financial position as at March 31, 2016, the combined statements of operations and fund balances and cash flows for the year then ended, and notes, comprising a summary of significant accounting policies and other explanatory information. The combined financial statements have been prepared by management in accordance with the basis of accounting in note 2(a) to the combined financial statements.

Management's Responsibility for the Combined Financial Statements

Management is responsible for the preparation of these combined financial statements in accordance with the basis of accounting in note 2(a) to the combined financial statements; this includes determining that the basis of accounting is an acceptable basis for the preparation of these combined financial statements in the circumstances, and for such internal control as management determines is necessary to enable the preparation of combined financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these combined financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the combined financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the combined financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the combined financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the entity's preparation of the combined financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the combined financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

KPMG LLP is a Canadian limited liability partnership and a member firm of the KPMG network of
independent member firms affiliated with KPMG International Cooperative ("KPMG International"),
a Swiss entity.
KPMG Canada provides services to KPMG LLP.

Opinion

In our opinion, the combined financial statements as at and for the year ended March 31, 2016 are prepared, in all material respects, in accordance with the basis of accounting in note 2(a) to the combined financial statements.

Basis of Accounting

Without modifying our opinion, we draw attention to note 2(a) to the combined financial statements, which describes the basis of accounting. The combined financial statements are prepared for the Northern Boundary and Transboundary River Restoration and Enhancement Trust Fund and Southern Boundary Restoration and Enhancement Trust Fund to meet their reporting requirements. As a result, the combined financial statements may not be suitable for other purposes.

Restriction on Use

Our report is intended solely for the Northern Boundary and Transboundary River Restoration and Enhancement Trust Fund, Southern Boundary Restoration and Enhancement Trust Fund, Pacific Salmon Commission, the Government of Canada, and the Government of the United States of America and should not be used by parties other than the Northern Boundary and Transboundary River Restoration and Enhancement Trust Fund, Southern Boundary Restoration and Enhancement Trust Fund, Pacific Salmon Commission, the Government of Canada, and the Government of the United States of America.

KPMG LLP

Chartered Professional Accountants

September 27, 2016
Vancouver, Canada

NORTHERN BOUNDARY AND TRANSBOUNDARY RIVER RESTORATION AND ENHANCEMENT TRUST FUND

and

SOUTHERN BOUNDARY RESTORATION AND ENHANCEMENT TRUST FUND

Combined Statement of Financial Position
(Expressed in Canadian dollars)

March 31, 2016, with comparative information for 2015

	Northern Boundary	Southern Boundary	2016 Total	2015 Total
Assets				
Current assets:				
Cash and cash equivalents	$ 3,518,394	$ 975,930	$ 4,494,324	$ 3,025,938
Accounts receivable	48,055	12,599	60,654	8,468
Interest receivable	9,474	-	9,474	11,000
Short-term investments	1,500,000	-	1,500,000	1,500,000
	5,075,923	988,529	6,064,452	4,545,406
Investments (note 3)	140,271,783	117,201,446	257,473,229	266,149,521
	$ 145,347,706	$ 118,189,975	$ 263,537,681	$ 270,694,927
Liabilities and Fund Balance				
Current liabilities:				
Accounts payable and accrued liabilities	$ 137,651	$ 63,986	$ 201,637	$ 190,221
Due to Pacific Salmon Commission (note 6)	71,587	62,503	134,090	124,262
	209,238	126,489	335,727	314,483
Fund balances	145,138,468	118,063,486	263,201,954	270,380,444
	$ 145,347,706	$ 118,189,975	$ 263,537,681	$ 270,694,927

Contractual obligations (note 4)
Minimum fund balances (note 5)

See accompanying notes to financial statements.

Approved on behalf of the Trustees:

U.S. Co-Chair Northern Boundary and Transboundary River Restoration and Enhancement Trust Fund

Can Co-Chair Northern Boundary and Transboundary River Restoration and Enhancement Trust Fund

U.S. Chair Southern Boundary Restoration and Enhancement Trust Fund

Can Co-Chair Southern Boundary Restoration and Enhancement Trust Fund

NORTHERN BOUNDARY AND TRANSBOUNDARY RIVER RESTORATION AND ENHANCEMENT TRUST FUND

and

SOUTHERN BOUNDARY RESTORATION AND ENHANCEMENT TRUST FUND

Combined Statement of Operations and Fund Balances
(Expressed in Canadian dollars)

Year ended March 31, 2016, with comparative information for 2015

	Northern Boundary	Southern Boundary	2016 Total	2015 Total
Investment income	$ 373,035	$ 309,349	$ 682,384	$ 31,377,167
Interest income	23,671	3,006	26,677	34,416
	396,706	312,355	709,061	31,411,583
Foreign exchange gain	1,167,925	973,589	2,141,514	9,430,566
Total revenue	1,564,631	1,285,944	2,850,575	40,842,149
Expenses:				
Administrative services (note 6)	159,847	159,847	319,694	310,274
Travel and accommodation	25,538	23,036	48,574	51,045
Rents and communications	5,012	5,098	10,110	11,755
Contract services	33,594	44,038	77,632	78,759
Investment management services	688,663	580,187	1,268,850	1,400,953
Project grants	4,803,583	3,499,760	8,303,343	7,228,483
Materials and supplies	397	465	862	1,397
	5,716,634	4,312,431	10,029,065	9,082,666
Excess (deficiency) of revenue over expenses	(4,152,003)	(3,026,487)	(7,178,490)	31,759,483
Fund balances, beginning of year	149,290,471	121,089,973	270,380,444	238,620,961
Fund balances, end of year	$ 145,138,468	$ 118,063,486	$ 263,201,954	$ 270,380,444

See accompanying notes to combined financial statements.

NORTHERN BOUNDARY AND TRANSBOUNDARY RIVER RESTORATION AND ENHANCEMENT TRUST FUND
and
SOUTHERN BOUNDARY RESTORATION AND ENHANCEMENT TRUST FUND
Combined Statement of Cash Flows
(Expressed in Canadian dollars)

Year ended March 31, 2016, with comparative information for 2015

	Northern Boundary	Southern Boundary	2016 Total	2015 Total
Cash provided by (used in):				
Operations:				
Excess (deficiency) of revenue over expenses	$ (4,152,003)	$ (3,026,487)	$ (7,178,490)	$ 31,759,483
Items not involving cash:				
Unrealized loss (gain) on investments	11,959,144	9,986,668	21,945,812	(19,882,761)
Gain on sale of investments	(7,345,345)	(6,132,659)	(13,478,004)	(4,155,654)
Gain on foreign exchange	(1,014,372)	(854,001)	(1,868,373)	(9,281,272)
Changes in non-cash operating working capital:				
Accounts receivable	(40,257)	(11,929)	(52,186)	(8,468)
Interest receivable	1,526	-	1,526	(5,978)
Due to Pacific Salmon Commission	(2,405)	12,233	9,828	4,797
Accounts payable and accrued liabilities	34,142	(22,726)	11,416	(239,730)
	(559,570)	(48,901)	(608,471)	(1,809,583)
Investing:				
Proceeds from sale of short-term investments	-	-	-	2,500,000
Purchase of short-term investments	-	-	-	(1,500,000)
Proceeds from sale of investments	28,306,173	22,379,688	50,685,861	9,903,648
Purchase of investment	(26,483,839)	(22,125,165)	(48,609,004)	(7,458,891)
	1,822,334	254,523	2,076,857	3,444,757
Increase in cash and cash equivalents	1,262,764	205,622	1,468,386	1,635,174
Cash and cash equivalents, beginning of year	2,255,630	770,308	3,025,938	1,390,764
Cash and cash equivalents, end of year	$ 3,518,394	$ 975,930	$ 4,494,324	$ 3,025,938

See accompanying notes to combined financial statements.

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1. Nature of organization:

The Northern Boundary and Transboundary River Restoration and Enhancement Trust Fund and the Southern Boundary Restoration and Enhancement Trust Fund (the "Trusts") were created by the Governments of the United States of America and Canada (the "Contracting Parties") to promote cooperation in the management, research and enhancement of Pacific salmon stocks.

2. Significant accounting policies:

(a) Basis of accounting:

These combined financial statements have been prepared in accordance with the significant accounting policies set out below. These combined financial statements are consistent with Canadian generally accepted accounting principles ("GAAP") except that they are presented on a combined basis in order to reflect the common administration of the Trusts by the management of the Pacific Salmon Commission.

Canadian GAAP has been interpreted to mean Canadian Accounting Standards for Not-for-Profit Organizations in Part III of the CPA Canada Handbook ("Not-for-Profit Standards").

(b) Financial instruments:

Financial instruments are recorded at fair value on initial recognition. Freestanding derivative instruments that are not in a qualifying hedging relationship and equity instruments that are quoted in an active market are subsequently measured at fair value. All other financial instruments are subsequently recorded at cost or amortized cost, unless management has elected to carry the instruments at fair value. The Trusts have elected to carry investments at fair value.

Transaction costs incurred on the acquisition of financial instruments measured subsequently at fair value are expensed as incurred. All other financial instruments are adjusted by transaction costs incurred on acquisition and financing costs, which are amortized using the straight-line method.

2. Significant accounting policies (continued):

(b) Financial instruments (continued):

Financial assets are assessed for impairment on an annual basis at the end of the fiscal year if there are indicators of impairment. If there is an indicator of impairment, the Trusts determine if there is a significant adverse change in the expected amount or timing of future cash flows from the financial asset. If there is a significant adverse change in the expected cash flows, the carrying value of the financial asset is reduced to the highest of the present value of the expected cash flows, the amount that could be realized from selling the financial asset or the amount the Trusts expect to realize by exercising rights to any collateral. If events and circumstances reverse in a future period, an impairment loss will be reversed to the extent of the improvement, not exceeding the initial carrying value.

(c) Cash and cash equivalents:

Cash and cash equivalents are comprised of cash on hand and short-term deposits with original maturities of three months or less.

(d) Revenue recognition:

The Trusts follow the deferral method of accounting for contributions. Unrestricted revenue is recognized when received or receivable if the amount to be received can be reasonably estimated and collection is reasonably assured. Funding received for specific purposes is deferred and recognized as revenue in the period in which the related expenses are incurred, or the restrictions are met.

(e) Income taxes:

The Trusts are non-taxable organizations under the Foreign Missions and International Organizations Act (1991).

(f) Foreign exchange translation:

Transactions originating in foreign currencies are translated at the exchange rate in effect at the transaction dates. Assets and liabilities denominated in foreign currency at the year-end date are translated to equivalent Canadian amounts at the exchange rate in effect at the year-end date. Foreign exchange gains and losses resulting from translation are included in the determination of excess or deficiency of revenue over expenses.

2. Significant accounting policies (continued):

(g) Use of estimates:

The preparation of the combined financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the combined financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results may differ from these estimates.

(h) Contractual obligations:

Contractual obligations are funded in instalments and payments are due based on conditions included in the contract being satisfied. Expenses and liabilities are recognized in the combined financial statements as these conditions are met.

3. Investments:

Investments consist of mutual funds under the supervision of an investment manager and custodian and consist of the following managed funds:

	Northern Boundary	Southern Boundary	2016 Total	2015 Total
International Equity Fund	$ 26,454,830	$ 22,103,835	$ 48,558,665	$ 50,709,755
US Equity Fund	22,256,379	18,595,898	40,852,277	44,633,942
Global Equity Fund	-	-	-	40,308,169
Global Infrastructure	13,467,231	11,252,291	24,719,522	29,036,404
Canadian Bond	58,957,474	49,260,807	108,218,281	70,793,207
US Real Estate	19,135,869	15,988,615	35,124,484	30,668,044
	$ 140,271,783	$ 117,201,446	$ 257,473,229	$ 266,149,521

4. Contractual obligations:

The Trusts have entered into a number of project grant contracts as at March 31, 2016 for the future funding of research projects to be completed subsequent to the year end.

These contractual obligations are funded in installments and payments are due based on conditions included in the contract being satisfied. As such, no liability has been accrued in the financial statements as the Trusts are not liable until these conditions have been met.

The research project contractual obligations as at March 31, 2016 of Northern Boundary and Transboundary River Restoration and Enhancement Trust Fund ("Northern Boundary") are $1,856,993 (2015 - $1,638,294) and of Southern Boundary Restoration and Enhancement Trust Fund ("Southern Boundary") are $1,669,703 (2015 - $1,709,808).

5. Minimum fund balances:

In line with Chapter IX, *Financial Regulations*, Section F of the Pacific Salmon Commission By-laws, the total expenditures of the Trusts should not exceed the total income from the Principal. The Principal was the amount provided at the point of constitution of the Trusts and was US$74,837,400 from the Government of the United States of America and CAD $250,000 from the Government of Canada in the Northern Boundary and US$64,902,400 from the Government of the United States of America and CAD $250,000 from the Government of Canada in the Southern Boundary. As at March 31, 2016, the Northern and Southern Boundary Funds were in excess of the minimum balances.

6. Administrative services:

The Pacific Salmon Commission ("Commission") charges fees for administrative services to the Trusts representing an allocation of Commission salaries and benefits expenses incurred on behalf of the Trusts. During the year, the Trusts paid $319,694 (2015 - $310,274) to the Commission for administrative services.

During the fiscal year ended March 31, 2016, the Trusts provided funding for projects totaling $1,679,148 (2015 - $706,804) to the Commission.

As at March 31, 2016, the Trusts have a payable to the Commission of $134,090 (2015 - $124,262).

7. Financial instruments:

(a) Market/currency risk:

The Trusts are exposed to market and currency risk on investments as a result of fluctuations in factors such as stock prices, interest rates, foreign exchange rates, and commodity prices. Management invests in a diverse investment portfolio, and engages a third party investment manager to mitigate the overall risk profile of its investments.

(b) Credit risk:

Credit risk is the risk that a third party to a financial instrument might fail to meet its obligations under the terms of the financial instrument. For cash and cash equivalents, accounts receivable, investments, and interest receivable, the Trusts' credit risk is limited to the carrying value on the statement of financial position. Management does not believe that the Trusts are subject to any significant concentration of credit risk.

(c) Liquidity risk:

Liquidity risk is the risk that an entity will not be able to meet its obligations associated with financial liabilities.

The Trusts manage liquidity risk by maintaining adequate cash and investment revenues. The Trusts monitor the cash flows in to ensure that the fund balances are maintained at a sufficient level in line with the Treaty.

Appendices

Appendix A

Northern Fund Projects for 2015/2016

Northern Fund 2015 Projects

	Description	Proponent	Org *	Area	CAN$	US$
	Enhancement					
1	2015 Tatsamenie Lake Sockeye Fry Extended Rearing & Smolt Project	Mercer	B.Mercer & Assoc	TBR	$ 83,053	
2	Tahltan Lake Egg-take 2015	Collins	DFO	TBR	$ 146,000	
3	Stikine Enhancement Feasibility Study	Erhardt	TAF	TBR	$ 95,086	
4	Recovery Enhancement of Kilbella-Chuckwalla Chinook	English	LGL	NBC	$ 98,000	
5	Trapper lake Sockeye Enhancement/ Sockeye Access Improvement Project	Mercer	B.Mercer & Assoc	TBR	$ 23,000	
	Habitat					
1	Lower Williams Creek Spawning Channel Feasibility	Miller	DFO	NBC	$ 45,000	
2	Tahltan Lake sockeye access improvement	Erhardt	TAF	TBR	$ 32,018	
3	Kwinageese River Blockage Remediation	Desson	NLG	NBC	$ 147,793	
4	Sockeye Habitat Rehabilitation - Babine Lake	McIntyre	LBNF	NBC	$ 47,477	
	Information					
1	Forecasting Southeast Alaska pink salmon harvest from juvenile salmon data: extension of models	Orsi	NOAA	SEAK		$ 49,760
2	Northern Boundary Area Sockeye Salmon Genetic Stock Identification for 2015	Guyon	NOAA	SEAK		$ 125,000
3	Stikine River Code Wire Tagging Augmentation, 2015	Etherton	DFO	TBR	$ 91,040	
4	Taku River Coho Salmon Escapement and Smolt Tagging Augmentation	Boyce	DFO	TBR	$ 64,800	$ 71,796
		Williams	ADFG		$ 59,400	$ 72,000
5	Genetic changes associated with in-basin supplementation of a population of sockeye; Phase 3	Joyce	NOAA	SEAK		$ 40,000
6	Stock composition of Stikine and Taku inriver fisheries - sample collection	Boyce	DFO	TBR	$ 47,900	
7	Northern and Transboundary sockeye matched scale-tissue sampling	Reynolds	ADFG	SEAK		$ 188,596
8	Genetic stock identification of District 106 and 108 sockeye, 2015	Gilk-Baumer	ADFG	SEAK		$ 114,000
9	Genetic stock identification of District 111 sockeye, 2015	Gilk-Baumer	ADFG	SEAK		$ 43,000
10	2015 Alsek Sockeye Run Reconstruction Using GSI	Huebschwerlen	DFO	TBR	$ 12,800	
11	McLoughlin Creek Enhanced Chum Assessment	Willis (Larsen)	DFO (HFN)	NBC	$ 17,700	
12	Southeast Alaska Chinook Salmon Stock Assessment	Jones	ADFG	SEAK		$ 160,000
13	Area 3 Wild Chum Assessment (Commercial fishery otoliths)	Peacock Agler	DFO	NBC	$ 11,095	$ 29,917
14	2013 - 2015 Stikine River Chinook Salmon Aerial Surveys	Waugh Etherton	DFO	TBR	$ 19,300	
15	Skeena Sockeye Lakes Juvenile Sockeye Hydroacoustic Surveys	Doire	SFC	NBC	$ 60,940	
16	Sockeye Smolt Enumeration at Babine Lake	Gottesfeld	SFC	NBC	$ 151,475	
17	Evaluation of New Approaches to Estimate Ecstall Chum Escapement	Hawryshyn	NCFNSC	NBC	$ 54,625	
18	Zymachord River Coho cwt Harvest Distribution	Anderson	NWES	NBC	$ 5,500	
19	Multi-species salmon assessment for the Wannock River	English	LGL	NBC	$ 28,900	
20	Skeena River Recreational Chinook Creel Survey 2014	English	LGL	NBC	$ 148,034	
21	Assessing fitness effects of sockeye salmon supplementation in Auke Creek, AK	McPhee	UAF	SEAK		$ 136,562
22	Alaska Department of Fish & Game Mark, Tag and Age Laboratory Support	Oxman	ADFG	SEAK		$ 62,700
23	Northern Boundary area summer chum salmon monitoring	Piston	ADFG	SEAK		$ 32,376
24	Genetic Analyses of samples collected in the Recreational Chinook Fisheries in Northern British Columbia	Winther	DFO	NBC	$ 25,000	
25	Genetic Stock Identification of Chinook salmon caught in Northern British Columbia Troll fisheries 2015	Winther	DFO	NBC	$ 68,000	
26	Chinook salmon Escapement Estimation to the Skeena River using Genetic techniques 2015	Winther	DFO	NBC	$ 36,000	
27	Mixed Stock Analysis of U.S. Districts 101, 102, and 103 Sockeye Seine Fisheries, 2015	Gilk-Baumer	ADFG	SEAK		$ 46,700
28	Alaska Department of Fish and Game Coded-Wire Tag Recovery Support	Oxman	ADFG	SEAK		$ 93,966
29	North Coast (Areas 3 & 4) Creel Survey	Hawryshyn	NCSFNSS	NBC	$ 173,810	
30	Central BC Chinook Mark Incidence and Catch Estimation Project 2015	Koroluk	DFO	NBC	$ 9,000	
31	Northern BC coho cwt sampling net fisheries	Peacock	DFO	NBC	$ 20,650	
32	Atnarko River Chinook Escapement Estimation Project 2015	Peacock Koroluk	DFO	NBC	$ 77,000	
33	Kwinamass and Khutzeymateen Rivers Chinook salmon Escapement Surveys 2015	Peacock	DFO	NBC	$ 17,500	
34	Central Coast Chinook salmon Escapement Aerial Surveys 2015	Peacock	DFO	NBC	$ 24,000	
35	Kitwanga River Salmon Enumeration, 2015	Kingston	GFA	NBC	$ 45,000	
36	Annual run reconstruction Northern Boundary Area Sockeye	Peacock Piston	DFO ADFG	SEAK NBC TBR	$ 21,640	
37	L. Trapper Sockeye and Kowatua-Tatsatua Chinook 2015-18	Boyce	DFO	TBR	$ 85,000	
38	Nass Chinook Mark-Recapture Project 2015	Desson	NLG	NBC	$ 118,000	
39	Adult Enumeration of Key Sockeye Systems within DFO Fishery Management Area 5	Watkinson	Gitxaala First Nation	NBC	$ 34,728	
40	Tahltan Lake Smolt Enumeration and Sampling, 2015	Boyce	DFO	TBR	$ 40,000	

41	Transboundary Rivers Chinook Salmon Telemetry	Richards	ADFG	TBR		$ 139,000
42	Skeena Test Fishery DNA	Cox-Rogers	DFO	NBC	$ 21,600	
43	Stock Composition of Stikine and Taku Inriver Fisheries	Etherton	DFO	TBR	$ 51,850	
44	Adapting benchmarks of biological status to variability in exploitation history and persistent changes in productivity	Holt	DFO	NBC	$ 21,685	
45	Nakina Creel Survey	Erhardt	TRTFN	TBR	$ 38,045	
46	Sockeye Smolt Enumeration at Babine Lake – Hydroacoustic Feasibility	Doire	SFC	NBC	$ 58,610	
47	Assessment of Chum Escapement to the Nass & Standardization of Methodologies	Desson	NLG	NBC	$ 70,000	
48	Assessment of Coastal Nass Coho Escapement	Desson	NLG	NBC	$ 29,800	
49	Gitanyow (Kitw anga) Lake Assessment - 2015	Kingston	GFA	NBC	$ 38,000	
50	Monitoring occurrence and prevalence of Ich, Loma and IHNV in Skeena River sockeye stocks	Garver	DFO	NBC	$ 37,170	
51	Hanford Reach fall Chinook salmon overescapement effects on emergence timing and size at emigration	McMichael	Mainstem Fish Research	NBC SEAK		$ 79,665
52	Kuthai Lake sockeye review	Erhardt	TRTFN	TBR	$ 55,274	
53	Nilkitkw a Lake and North Arm of Babine Lake Juvenile Sockeye Hydroacoustic Surveys	Doire	SFC	NBC	$ 24,888	
54	Babine River sockeye migration and predation	Mcintyre	Lake Babine	NBC	$ 44,022	
55	Stikine River Chinook Research Cabin Rebuild	Jaecks	ADFG	TBR		$ 47,760
				2015 Totals	**$2,777,208**	**$1,532,798**

*** Area Glossary**

Gitanyow Fisheries Authority	GFA
Heiltsuk First Nation	HFN
Lake Babine Nation Fisheries	LBNF
Nisga'a Lisims Government	NLG
North Coast - Skeena First Nations Stewardship Society	NCSFNSS
Northwest Watershed Enhancement Society	NWES
Skeena Fisheries Commission	SFC
Taku River Tlingit First Nation	TRTFN
Tahltan Fisheries	TAF
Takshanuk Watershed Council	TWC
Nuu chah nulth/WCVI Aquatic Management Society	WCVI AMS

Appendix B

Southern Fund Projects for 2015/2016

Southern Fund 2015 Projects

	Description	Proponent	Country	Org	Area	CAN$	US$
	Ongoing Goal 1 - Improve the Management of Fisheries Relevant to the Pacific Salmon Treaty						
1	Calibration of Assessment Methods for Fraser Sockeye Spawning Populations Between 25K-75K. Year 7	Benner	CAN	DFO	FR	$ 36,000	
2	Joint US and CA Mixed-Stock Chum Fisheries Sampling Design	Van Will	CAN	DFO	PS, SoBC	$ 75,000	
3	Continuing the evaluation of abundance and stock composition of downstream migrating juvenile Sockeye salmon in the lower Fraser River in 2015 (Year 4)	Tadey	CAN	DFO	FR	$ 129,732	
4	Qualark Acoustics: estimating daily salmon passage in the Fraser River near Yale, BC in 2015	Whitehouse	CAN	DFO	FR	$ 260,018	
5	Effects of early marine growth on adult Fraser sockeye salmon returns	Holt (Godbout)	CAN	DFO	FR	$ 38,000	
6	Burman River Chinook salmon mark-recapture 2015	Dunlop	CAN	NTC	WCVI	$ 98,807	
7	Coho CWT sampling program hand- held equipment replacement	Fraser	CAN	DFO	SoBC	$ 46,375	
8	Southern BC and Puget Sound chum salmon microsatellite baseline	Beacham	CAN	DFO	SoBC, PS	$ 90,000	
9	Chum Salmon Southern Area Genetic Baseline Enhancement. Part 2: Expanded SNP Collections, Genotyping, and Amplicon Development	Warheit	US	WDFW	PNW		$ 100,000
	New Goal 1 - Improve the Management of Fisheries Relevant to the Pacific Salmon Treaty						
1	Increased CWT application in Southern B.C. coho indicator stocks	Willis	CAN	DFO	SoBC	$ 46,737	
2	Improvements to describing and predicting en-route loss for Fraser sockeye salmon	Patterson	CAN	DFO	FR	$ 44,000	
3	Exploitation rates estimation for Coho salmon in south coast marine fisheries using GSI	Candy	CAN	DFO	SoBC	$ 100,000	
4	Assessment of Adaptive Resolution Imaging Sonar (ARIS) for fish counting in the Lower Fraser River	Martens	CAN	PSC	FR	$ 45,150	
5	Identification and assessment of hatchery coho stocks in Southern BC mixed stock fisheries using Parental-Based Tagging (PBT)	Willis	CAN	DFO	SoBC	$ -	
6	Adapting benchmarks of biological status for Chum Salmon to variability in exploitation history and persistent changes in productivity	Holt	CAN	DFO	SoBC	$ 39,371	
7	Near-shore species composition estimates needed for assessing salmon escapement using Mission hydroacoustic counts when pink salmon are abundant in the Fraser River	English	CAN	LGL Ltd	FR	$ 40,144	
	Ongoing Goal 2 - Address Priority Stocks of Interest						
1	Collection of DNA Based Stock Composition Data from the WCVI Chinook Troll Fishery	Mathias	CAN	DFO	WCVI	$ 75,000	
2	South Fork Nooksack Chinook captive brood implementation	Eleazer	US	WDFW	PS		$ 86,759
3	Cowichan juvenile Chinook habitat use assessment to direct lower river & estuary rehabilitation	Craig	CAN	BCCF	GB	$ 32,045	
	Ongoing Goal 4 - Gain Better Understanding and Incorporate Ecosystem Factors into Underlying Science and Management Processes						
1	Salish Sea Marine Survival Project 2015. Year 2	Schmidt	US	LLTK	GB, PS		$ 400,000
	Salish Sea Marine Survival Project 2015. Year 2	Ridell	CAN	PSF	GB, PS		$ 400,000
2	Migration timing of juvenile Fraser River sockeye in Johnstone Strait	Trudel	CAN	DFO	GB	$ 130,000	
3	A spatially-explicit ecosystem model for quantifying marine mammal impacts on Chinook salmon in the Northeast Pacific Ocean	Kaplan	US	NOAA	PNW		$ 104,000
						$ 1,334,379	$ 1,090,759

Area Glossary

CR	Columbia River watershed
FR	Fraser River watershed
GB	Geogia Basin
JDF	Juan de Fuca Strait
OR	Oregon
PNW	Pacific Northwest (all SEF areas)
PS	Puget Sound
SoBC	Southern BC
WC	Washington Coast
WCVI	West Coast Vancouver Island

Appendix C

Appointment of Officers for 2015/2016

Effective December 1, 2015 a new slate of officers for the Pacific Salmon Commission was identified as follows:

OFFICE	COUNTRY	REPRESENTATIVE
Commission Chair	U.S.	Phil Anderson
Commission Vice-Chair	Can	Susan Farlinger
Fraser River Panel Chair	U.S.	Kirt Hughes
Fraser River Panel Vice-Chair	Can	Jennifer Nener
Northern Panel Chair	U.S.	Lowell Fair
Northern Panel Vice-Chair	Can	Mel Kotyk
Southern Panel Chair	U.S.	Laurie Peterson
Southern Panel Vice-Chair	Can	Andrew Thomson
Transboundary Panel Chair	U.S.	John Clark
Transboundary Panel Vice-Chair	Can	Steve Gotch
Stan. Comm. on F&A - Chair	U.S.	W. Ron Allen
Stan. Comm. on F&A - Vice-Chair	Can	Rebecca Reid
Stan. Comm. on Scientific Cooperation - Chair	U.S.	Alex C. Wertheimer
Stan. Comm. on Scientific Cooperation - Vice-Chair	Can	Mark Saunders
Technical Committee on Data Sharing - Co-Chair	U.S.	George Nandor
Technical Committee on Data Sharing - Co-Chair	Can	Kathryn Fraser
Fraser River Panel Technical Committee - Co-Chair	U.S.	Robert Conrad
Fraser River Panel Technical Committee - Co-Chair	Can	Ann-Marie Huang
Northern Boundary Technical Committee - Co-Chair	U.S.	Andrew Piston
Northern Boundary Technical Committee - Co-Chair	Can	Steve Cox-Rogers
Transboundary Technical Committee - Co-Chair	U.S.	Edgar Jones
Transboundary Technical Committee - Co-Chair	Can	Steve Smith
Enhancement Subcommittee of the Transboundary Technical Committee - Co-Chair	U.S.	Garold Pryor
Enhancement Subcommittee of the Transboundary Technical Committee - Co-Chair	Can	Corino Salomi
Joint Chinook Interface Group Co-Chair	U.S.	Charles Swanton
Joint Chinook Interface Group Co-Chair	Can	Paul Sprout
Joint Technical Committee on Chinook - Co-Chair	U.S.	John Carlile
Joint Technical Committee on Chinook - Co-Chair	Can	Gayle Brown
Joint Technical Committee on Coho - Co-Chair	U.S.	Gary Morishima
Joint Technical Committee on Coho - Co-Chair	Can	Arlene Tompkins
Joint Technical Committee on Chum - Co-Chair	U.S.	Jay Zischke
Joint Technical Committee on Chum - Co-Chair	Can	Pieter Van Will
Joint Technical Committee on Habitat and Restoration Co-Chair	U.S.	Thom Hooper
Joint Technical Committee on Habitat and Restoration Co-Chair	Can	TBD
Selective Fishery Evaluation Committee - Co-Chair	U.S.	Gary Morishima
Selective Fishery Evaluation Committee - Co-Chair	Can	Rob Houtman

Appendix D

Approved Budget FY 2016/2017

PACIFIC SALMON COMMISSION

APPROVED BUDGET 2016/2017

1	INCOME	December 2015
A.	Contribution from Canada	$1,879,636
B.	Contribution from U.S.	$1,879,636
	Sub total	$3,759,272
C.	Carry-over from 2015/2016	$908,668
D.	Interest	$8,000
E.	Other income	$177,000
F.	Total Income	$4,852,940
2	EXPENDITURES	
A.	1. Permanent Salaries and Benefits	$2,665,935
	2. Unfunded pension liability payments	221,412
	3. Temporary Salaries and Benefits	$183,284
	4. Total Salaries and Benefits	$3,070,631
B.	Travel	$98,510
C.	Rents, Communications, Utilities	$128,002
D.	Printing and Publications	$4,800
E.	Contractual Services	$629,064
F.	Supplies and Materials	$43,091
		$903,467
G.	Equipment	$264,328
H.	Total Expenditures	$4,238,425
3	BALANCE (DEFICIT)	$614,515

Appendix E

Pacific Salmon Commission Secretariat Staff as of March 31, 2016

EXECUTIVE OFFICE

John Field
Executive Secretary

Teri Tarita
Records Administrator/Librarian

Clare Rochfort
Administrative Assistant

Kimberly Bartlett
Meeting Planner

Sandie Gibson
Information Technology Manager

FINANCE & ADMINISTRATION

Ilinca Manisali
Controller

Bonnie Dalziel
Accountant

Witty Lam
Accounting Assistant

Angus Mackay
Manager, Restoration & Enhancement Funds

Victor Keong
Program Assistant, Restoration & Enhancement Funds

FISHERY MANAGEMENT

Mike Lapointe
Chief Biologist

Catherine Michielsens
Director, Modelling and Data Management

Merran Hague
Quantitative Biologist

Ian Guthrie
Manager, Stock Assessment

Steve Latham
Stock Identification Biologist, Sockeye

Bruce White
Stock Identification Biologist, Pinks

Erica Jenkins
Stock ID Biologist

Maxine Forrest
Senior Scale Analyst

Julie Sellars
Assistant Scale Analyst

Catherine Ball
Scale Lab Assistant

Jim Cave
Head, Stock Monitoring Group

Keith Forrest
Manager, Test Fishing Operations

Yunbo Xie
Hydroacoustics Scientist

Fiona Martens
Manager, Hydroacoustics Operations

Jacqueline Nelitz
Hydroacoustic Technician

Mike Bartel-Sawatzky
Hydroacoustic Technician

Cory Lagasse
Salmon Technician

Appendix F

Membership Lists for Standing Committees, Panels, Joint Technical Committees and other Appointments as of March 31, 2016

1. STANDING COMMITTEE ON FINANCE AND ADMINISTRATION

Ms. Rebecca Reid (Vice-Chair)
Ms. Bonnie Antcliffe
Mr. Randy Atwal
Ms. Kirsten Ruecker
Mr. Derek Mahoney

Mr. W. Ron Allen (Chair)
Ms. Alison Agness
Mr. William F. Auger
Mr. Mike Clark
Ms. Natalie Howard
Mr. Mike Matylewich

Staff

Mr. John Field (ex. Officio)

Editorial Board

Ms. Kirsten Ruecker

Ms. Alison Agness

Staff

Mr. John Field (ex. Officio)

2. FRASER PANEL

Ms. Jennifer Nener (Vice-Chair)
Mr. Chris Ashton
Mr. Mike Griswold
Chief Ken Malloway
Mr. Rob Morley
Mr. John Murray

Mr. Kirt Hughes (Chair)
Mr. James Dixon
Mr. Robert F. Kehoe
Ms. Lorraine Loomis

FRASER RIVER PANEL - ALTERNATES

Mr. Les Jantz
Mr. Brent McCallum
Mr. Tony Roberts Jr.
Mr. Les Rombough
Mr. Peter Sakich
Mr. Marcel Shepert

Mr. Ronald G. Charles
Mr. Kirt Hughes
Mr. Jack R. Giard
Ms. Peggy Mundy

3. SOUTHERN PANEL

Mr. Andrew Thomson (Vice-Chair)
Dr. Don Hall
Mr. John Legate
Mr. Jeremy Maynard
Mr. Laurie Milligan

Ms. Laurie Peterson (Chair)
Mr. Burnie Bohn
Mr. Mark Newell
Mr. Joseph Oatman
Mr. Terry R. Williams

SOUTHERN PANEL - ALTERNATES

Mr. Michal Baird
Mr. Rod Cootes
Ms. Brigid Payne
Ms. Marilyn Scanlan
Mr. Gord Sterritt
Mr. Phil Young

Mr. Larry Carpenter
Ms. Denise Hawkins
Mr. Edward Johnstone
Mr. Chris Kern
Mr. Joseph C. Peters
Mr. Ron Warren

4. NORTHERN PANEL

Mr. Mel Kotyk (Vice-Chair)
Mr. Chris Cue
Mr. Bill de Greef
Mr. Seigi Kriegl
Mr. Tom Protheroe
Ms. Joy Thorkelson

Mr. Lowell Fair (Chair)
Mr. Clay Bezenek
Mr. Robert D. Mecum
Mr. Howard Pendell
Mr. Russell Thomas
Mr. Robert M. Thorstenson

NORTHERN PANEL - ALTERNATES

Mr. Stuart Barnes
Mr. Ronald (George) Cuthbert
Ms. Sandra Davies
Mr. Rick Haugan
Mr. Greg Knox
Chief Harry Nyce Sr.

Mr. John Carle
Mr. Brennon Eagle
Mr. Mitchell Eide
Mr. Brian Frenette
Dr. Peter Hagen
Mr. Dennis Longstreth

5. TRANSBOUNDARY PANEL

Mr. Steve Gotch (Vice-Chair)
Ms. Cheri Frocklage
Mr. Keith Carlick
Ms. Jennifer Gould
Mr. Chris Kendel
Mr. Wolfe Riedl
Ms. Linaya Workman

Dr. John H. Clark (Chair)
Mr. James Becker
Mr. Rod Brown
Mr. Arnold Enge
Mr. Gary Gray
Dr. Peter Hagen
Ms. Dale A. Kelley

6. STANDING COMMITTEE ON SCIENTIFIC COOPERATION

Mr. Mark Saunders (Vice-Chair)
Dr. Carmel Lowe

Mr. Alex C. Wertheimer (Chair)
Dr. Jeffrey J. Hard

7. NORTHERN FUND COMMITTEE

Mr. Steve Gotch (Co-Chair)
Mr. John McCulloch
Mr. Tom Protheroe

Mr. Charles Swanton (Co-Chair)
Mr. William F. Auger
Mr. Robert Mecum

8. SOUTHERN FUND COMMITTEE

Mr. Andrew Thomson (Co-Chair)
Dr. Don Hall
Mr. Mike Griswold

Mr. Larry Peck (Co-Chair)
Mr. Peter Dygert
Mr. Joseph Oatman

9. JOINT TECHNICAL COMMITTEE ON CHINOOK

Dr. Gayle Brown (Co-Chair)
Mr. Richard Bailey
Ms. Sabrina Crowley
Ms. Diana Dobson
Ms. Dawn Lewis
Ms. Elinor McGrath
Mr. Chuck Parken
Dr. Teresa Ryan
Dr. Antonio Velez-Espino
Mr. Ivan Winther

Mr. John Carlile (Co-Chair)
Dr. Marianna Alexandersdottir
Mr. Johnathan Carey
Dr. John H. Clark
Mr. Robert Clark
Mr. Ethan Clemons
Mr. Tim Dalton
Mr. Brian Elliott
Ms. Danielle Evenson
Mr. Gary R. Freitag
Mr. Andrew Gray
Mr. Edgar Jones
Dr. Robert Kope
Mr. Larrie LaVoy
Ms. Marianne McClure
Mr. Peter McHugh
Mr. Scott McPherson
Dr. Gary S. Morishima
Mr. Randy Peterson
Dr. Kristen Ryding
Mr. Rishi Sharma
Mr. William Templin
Mr. Eric Volk
Mr. Henry J. Yuen

10. JOINT TECHNICAL COMMITTEE ON COHO

Dr. Arlene Tompkins (Co-Chair)
Mr. Roger Dunlop
Mr. Nick Komick
Mr. Peter Nicklin
Ms. Lynda Ritchie
Mr. Joel Sawada

Dr. Gary S. Morishima (Co-Chair)
Ms. Carrie Cook-Tabor
Mr. Craig Foster
Ms. Angela Hagen-Breaux
Mr. Jeff Haymes
Mr. Diego Holmgren
Dr. Peter W. Lawson
Mr. Andy Rankis
Ms. Laurie Weitkamp
Ms. Mara Zimmerman

(Northern Coho)

Dr. John H. Clark
Ms. Michele Masuda
Mr. Leon D. Shaul

11. JOINT TECHNICAL COMMITTEE ON CHUM

Mr. Pieter Van Will (Co-Chair)
Mr. John R. Candy
Ms. Kim Charlie
Ms. Marla Maxwell
Mr. Joe Tadey

Mr. Jay Zischke (Co-Chair)
Mr. Scott Bass
Mr. Bill Patton
Ms. Maureen Small
Dr. Gary Winans

12. JOINT TECHNICAL COMMITTEE ON HABITAT AND RESTORATION

Dr. Allen Gottesfeld
Dr. Peter Tschaplinski
Mr. Howie Wright

Mr. Thom Hooper (Co-Chair)
Mr. Kim Jones
Mr. Jeff Nichols

13. TECHNICAL COMMITTEE ON DATA SHARING

Ms. Kathryn Fraser (Co-Chair)
Mr. Nicholas Komick
Ms. Cheryl Lynch

Mr. George Nandor (Co-Chair)
Mr. P. Brodie Cox
Mr. Timothy Frawley
Mr. Mike Matylewich
Dr. Gary S. Morishima
Ms. Amy Seiders

Working Group on Data Standards

Ms. Kathryn Fraser (Co-Chair)
Mr. Nicholas Komick
Ms. Brenda Ridgway

Mr. George Nandor (Co-Chair)
Mr. Gabriel T. Garza
Mr. Gilbert Lensegrav
Mr. Ken Phillipson

14. FRASER RIVER PANEL TECHNICAL COMMITTEE

Ms. Ann-Marie Huang (Co-Chair)
Ms. Sue Grant
Mr. Rob Goruk
Mr. Jamie Scroggie
Mr. Mike Staley

Mr. Robert Conrad (Co-Chair)
Mr. Aaron Dufault
Ms. Peggy Mundy

15. NORTHERN BOUNDARY TECHNICAL COMMITTEE

Mr. Steve Cox-Rogers (Co-Chair)
Mr. Mark Potyrala
Dr. Allen Gottesfeld

Mr. Mr. Bo Meredith (Co-Chair)
Ms. Malika Brunette
Mr. Chuck Guthrie
Ms. Michele Masuda
Ms. Sara Miller
Ms. Anne Reynolds
Ms. Pattie Skannes
Mr. Eric Volk
Mr. Scott Walker

16. SELECTIVE FISHERY EVALUATION COMMITTEE

Dr. Rob Houtman (Co-Chair)
Ms. Cheryl Lynch
Mr. Joel Sawada

Dr. Gary S. Morishima (Co-Chair)
Dr. Marianna Alexandersdottir
Mr. John Carey
Ms. Carrie Cook-Tabor
Mr. Danielle Evenson
Mr. Ken Johnson
Mr. Mark Kimbel
Mr. Ryan Lothrop
Ms. Marianne McClure
Mr. George Nandor
Mr. Ron Olson
Dr. Kristen Ryding
Ms. Michelle A. Varney
Ms. Lorraine Vercessi

17. TRANSBOUNDARY TECHNICAL COMMITTEE

Mr. Steve Smith (Co-Chair)
Mr. Ian Boyce
Mr. Richard Erhardt
Ms. Bonnie Huebschwerlen
Mr. Johnny Sembsmoen
Mr. Sean Stark
Mr. Bill Waugh

Mr. Edgar Jones (Co-Chair)
Mr. Jim Andel
Ms. Sara Gilk-Baumer
Ms. Julie Bednarski
Mr. Robert Clark
Mr. Scott Forbes
Mr. David Harris
Mr. Phil Richards
Mr. Troy Thynes
Mr. Nicole Zeiser

ENHANCEMENT SUB-COMMITTEE

Mr. Corino Salomi (Co-Chair)
Mr. Sean Collins
Mr. Richard Erhardt
Ms. Cheri Frocklage

Mr. Garold Pryor (Co-Chair)
Mr. John Joyce
Mr. Eric Prestegard
Ms. Lorraine Vercessi

18. JOINT CHINOOK INTERFACE GROUP

Mr. Paul Sprout (Co-Chair)
Mr. John McCulloch
Dr. Brian E. Riddell

Mr. Phil Anderson (Co-Chair)
Mr. McCoy Oatman
Mr. Charles Swanton

19. NATIONAL CORRESPONDENTS

Ms. Kirsten Ruecker

Ms. Alison Agness